The contribution of Qur'an and Hadit early Islamic chronology.

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The Contribution

of

Qur'ān and Ḥadīṯ

to

Early Islamic Chronology

by

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M. A. McPARTLAN, The Contribution of Qur'ān and Ḥadīṯ to Early Islamic Chronology.

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The researcher in the field of early Islamic chronology has a plethora of sources to work with many of which contain numerous variants, some of which contradict each other.

Many serious attempts have been made to unravel the chronology of Muḥammad's life and the beginnings of Islam without success because, in the view of the present work, they lack a certain critical approach.

One important factor to have been ignored is "hindsight chronology". This concept stems from the fundamental problem of distinguishing whether sources being studied can be traced back to the earliest years of the Islamic community without any significant alteration, or if they have been edited. The most obvious example is that of a source which describes an event as happening a number of months after the Hiğra. If, in the process of collecting and transmitting this tradition, an author works out the month name from the number of months, s/he has already altered the source and imposed his or her interpretation of the prevalent calendar on it.

The sources available are too numerous and rich for any one piece of research, which is why the present work concentrates on events described in the Qur'ān and Ḥadīṯ which could yield a chronological fix. This initial exploration of the above mentioned sources has made use of material from many different disciplines, all of which deserve systematic and detailed exploration in order to discover whether they could yield chronological data.

The conclusions of this present work can in no way be considered definitive, but rather as a first and small contribution to a much larger undertaking. Nevertheless, it has demonstrated that there is valuable information to be gleaned from careful and systematic study of seemingly insignificant details contained in widely differing sources.

Many thanks to all those who

have lived with this work for

the past six years and

contributed to it in various

ways.

Special thanks to

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TRANSLITERATION

Alphabet

Whenever quoting from a source, the source's system of transliteration is followed in so far as possible, otherwise the following system of transcription is used which transliterates one Arabic letter with one transliteration letter. The rationale behind this, is that the computer makes it relatively simple and it is the first step towards automated transliteration.

Arabic	Translite ration	Phonetic description	Pronunciation
ء	'	Laryngeal plosive	No equivalent in English
آ	ā		Mary, or half[1]
ب	b	Bilabial plosive	big
ت	t	Dental plosive	tee
ث	ṯ	Interdental fricative	think
ج	ǧ	Velar plosive	jade
ح	ḥ	Pharyngeal fricative	No equivalent in English
خ	ḫ	Velar fricative	loch (Scotland)
د	d	Dental plosive	dog
ذ	ḏ	Interdental fricative	that
ر	r	Dental rolled	rolled as sometimes in Scotland
ز	z	Dental fricative	zebra

[1] The pronunciation guide is only an indication. Different letters of the alphabet have different regional pronunciations, which can not be taken into account here.

Arabic	Translite ration	Phonetic description	Pronunciation
س	s	Dental fricative	sun
ش	š	Palato-aveolar fricative	ship
ص	ṣ	Dental fricative	No equivalent in English
ض	ḍ	Interdental lateralised	No equivalent in English
ط	ṭ	Dental plosive	No equivalent in English
ظ	ẓ	Interdental fricative	No equivalent in English
ع	ʿ	Pharyngeal fricative	No equivalent in English
غ	ġ	Velar fricative	prends (Parisian French)
ف	f	Bilabial fricative	file
ق	q	Velar plosive	Qatar
ك	k	Velar plosive	kettle
ل	l	Dental lateral	long
م	m	Bilabial nasal	moon
ن	n	Dental nasal	nut
ه	h	Laryngeal fricative	house
و	w	Bilabial semivowel	war
ي	y	Bilabial semivowel	yellow
ـَ	a	Open back velar vowel	cat
ا ـَ	ā	Long a	Mary or half
ـِ	i	Close front palatal vowel	thin

Arabic	Translite ration	Phonetic description	Pronunciation
ـِـی	ī	Long i	feel
ـُـ	u	Close back velar vowel	Short "oo"
ـُـو	ū	Long u	boo

Some rules of transliteration:

1. The "tā marbūṭa" is not written - Makka and not Makkat - unless the word is in the construct state - Madīna, but Madīnat al Nūr.
2. If the hamza is the first letter of a word it is not transcribed.
3. The *mādda* and *alif maqṣūra* are both transcribed as "ā".
4. The article is never assimilated: al šams not aš šams.
5. The *nisba* is written "ī" in the masculine form and "īya" in the feminine.
6. The final vowel of a word is not usually transcribed.
7. In quotations, the transliteration used in the work being quoted, is respected.

Common words and names

With the advent of word processors and font editors, there is no longer any excuse for not making the effort to transliterate the more common names and words within the text of a study such as this. Hence, when not quoting from other sources the following are used:

Muḥammad	The name knows many different spellings: Muhammad, Mahomed, Mohammad...
ḥadīṯ	Most commonly spelled "hadith".

Makka	Mecca
Madīna	Madina
Qur'ān	Koran, Quran
Muslim	Moslem
Sūra	Surat, Soura

MUḤAMMAD : A Traditional Chronology[2]

AD	AH	EVENT
570		Attack on Makka by Abraha, the Ethiopian governor of South Arabia. The role played by an elephant led to the year becoming known as Year of the Elephant.
		Birth of Muḥammad, shortly after the death of his father, ʿAbdallāh b. ʿAbd al Muṭṭalib, in the year of the Elephant.
577		Death of Amīna bint Wahb, Muḥammad's mother. Muḥammad was raised by his grandfather, ʿAbd al Muṭṭalib b. Ḥāšim and after his death, by his uncle, Abū Ṭālib.
590-595		Voyages with caravans to Syria.
591		Muḥammad enters into the service of a rich widow, Ḫadīğa bint Ḫūwaylid.
596		Muḥammad marries, Ḫadīğa bint Ḫūwaylid. They had several children: Qāsim, Zaynab, Ruqayya, Umm Kulṯūm and Fāṭima.[3]

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[2] This chronology presents generally accepted dates for events during the life of Muḥammad, some of which the present work is attempting to verify. Little effort has been made to reconcile the differences between different chronological theories. The aim of this section is simply to provide a chronological skeleton which will help the reader situate events discussed in detail later in the study. Such an attempt is always going to be unsatisfactory, given that the form does not allow for all possible nuances of the presentation to be discussed.

The main sources used are:

Maurice Gaudefroy-Demombynes, *Mahomet* (Paris: Albin Michel, 1969), 59-207.

Robert Mantran, *Le Grandi Date: Islam* (Milano: Paoline, 1991), passim.

Muḥammad b. Šarīr Abū Ğaʿfar Ṭabarī, *Mohammed, sceau des prophètes* (Paris: Sindbad, 1980), 360.

William Montgomery Watt, *Muhammad at Medina* (Karachi: Oxford University Press, 1955), 339-343.

J. M. B. Jones, "The Chronology of the Maghāzi - A Textual Survey," *Bulletin of the School of Oriental and African Studies* 19 (1957): 245-280.

[3] Muḥammad was known by the *Kunya* Abū Qāsim and therefore had a son of the same name. If this is indeed the case, then the child died before it was weaned. Zaynab died in Madīna in AH 8, survived by a daughter, Umāma who married ʿAlī after the death of Fāṭima, another of Muḥammad's daughters by Ḫadīğa. Ruqayya married ʿUṯmān b. ʿAffān, after a first marriage to a son of Abū Lahab was broken by

AD	AH	EVENT
610		Muḥammad receives the first revelation of the text of the Qur'ān.
613		Muḥammad preaches to the Makkans: among them are the first believers and first persecutors.
615		Exodus of first believers to Ethiopia.
619		Death of Ḫadīğa bint Ḫūwaylid.
		Death of Abū Ṭālib.
620-621		Conversion of the Ḫazrağ and Awṣ tribes from Yaṯrib.[4]
		Muḥammad marries Sawda bint Zamʿa, widow of al Sakrān ibn ʿAmr, who had gone with her husband to Abyssinia.
	Rağab 27	Al Isrā', the nocturnal journey made by Muḥammad to Jerusalem.
	Ramaḍān 17	Laylat al miʿrāğ, or Muḥammad's nocturnal journey to heaven.[5]
622		Pact of ʿAqaba in which the new converts pledge obedience to Muḥammad.
		Departure of believers for Madīna.
	1 Rabīʿ I	Arrival of Muḥammad in Madīna.
	1 Ramaḍān	Ḥamza's raid to the coast.
	1 Šawwāl	Attack[6] against the Qurayš a at Rābiġ, led by ʿUbayda. No fighting.

her father, she fled to Abyssinia then returned to Madīna where she died just before her father returned from the battle of Badr. Umm Kulṯūm, like Ruqayya, had a first marriage to a son of Abū Lahab which was broken by her father. After the death of Ruqayya, she married ʿUṯmān b. ʿAffān. She died in AH 9. Fāṭima married ʿAlī b. Abī Ṭālib, and bore him several children, the most famous being Ḥasan and Ḥusayn. She died a few months after her father, in AH 11.

4 Yaṯrib became known as Madīnat al nabī (*City of the Prophet*) which is usually shortened to Madīna.

5 Some sources question whether there were two separate incidents, asserting that al Isrā' and laylat al miʿrāğ happened at the same time.

6 Chronologically speaking, the battles and raids are of interest because they are the source of much discussion about when they took place. As some of the sources date events by counting the number of months between them and the Hiğra, there is potential for different interpretations of the underlying

AD	AH	EVENT
	1 Ḏū al Qa'da	Raid against the Qurayš at al Ḫarrār.
623	2 Ṣafar	Raid against the Qurayš at al Abwā' led by Muḥammad. No fighting.
	2 Rabī' I	Raid against the Qurayš at Buwāṭ led by Muḥammad. No fighting. Expedition to kill the Jew Ka'b b. al Ašraf.
624	2 Ǧumādā II	Raid against the Qurayš at al 'Ušayra, led by Muḥammad. No fighting. Kurz b. Ǧābir al Fahri raided the camels of Madīna and Muḥammad went in pursuit.
	2 Rağab	Attack on a Makkan caravan at Naḫla, led by 'Abd Allāh b. Ǧaḥš. One Qurayšī killed.
	2 Ša'bān[7]	Change of the *qibla* from Jerusalem to Makka.
	2 Ramaḍān[8]	Victory over the Qurayš at Badr. Death of Ruqayya bint Muḥammad before her father's return from Badr. Institution of the Ramaḍān fast.
	2/1 Šawwāl[9]	Muḥammad marries 'Āiša bint Abī Bakr. In reality, they had been married some two years previously, but it was only at this time that the marriage was consummated. Marriage of Fāṭima bint Muḥammad to 'Alī ibn Abī Ṭālib.
		Raid on the Banū Sulaym in al-Kudr. No fighting.

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calendar. Once again, it is worth noting here that we are less interested in discussing why any given event took place, than in dating it.

7 Other sources say that this took place in the middle of the month.

8 Other sources give 17 of the month.

9 There is some discussion as to whether the marriage was consummated in AH 1 or 2.

AD	AH	EVENT
	2 Ḍū al Ḥiğğa	Raid against the Qurayš at al Sawīq, led by Muḥammad.
	3 Muḥarram	Raid of Ḍū Amarr in the Naǧd, led by Muḥammad. No fighting.
	3 Ṣafar	Raid Marṭad b. Abī Marṭad, also known as the Raǧīʿ incident.[10]
	3 Rabīʿ I	Zayd b. Ḥāriṯa captures a Qurayš caravan at al Qarada.
	3 Ǧumādā I	The Banū Qaynuqāʿ, a Jewish tribe, are expelled from Madīna.
625	3 Šawwāl	The Qurayš beat the Muslims at Uḥud.
	4 Ṣafar	Attack against the banī Sulaym at Bi'r Maʿūna, led by al Munḏir b. ʿAmr. Some Muslims were killed.
	4 Rabīʿ I	The Banū Naḍīr, a Jewish tribe, are expelled from Madīna. Muḥammad marries Ḥafṣa bint ʿUmar b. al Ḫaṭṭāb, widow of a Muslim killed at Badr.
626	4	Muḥammad marries Umm Salama (Hind) bint al Muġīra, whose husband, Abū Salama died of wounds received at Uḥud.
	4 Ǧumādā I	Raid into the Naǧd, led by Muḥammad, known as "Ḏāt al Riqāʿ".
	4 Šaʿbān	Badr Mawʿid an expedition, led by Muḥammad to fight the men of Makka, but Abū Sufyān turned back his army.
	4 Ramaḍān	Muḥammad marries Zaynab bint Ḫuzayma who died a few months (years?) after the marriage.[11] Previous to this marriage, Zaynab had married al Ṭufayl b. al Ḥāriṯ, divorced him and married his brother, ʿUbayda, who was killed at Badr.
627		Muḥammad marries Ǧuwayrīya bint al Ḥāriṯ, daughter of the chief of the Banī Muṣṭaliq. Captured in an attack on her tribe, she professed Islam, was set free and married.

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[10] See below, Sarīya Marṭad b. Abī Marṭad 81 ff. for details of this event.

AD	AH	EVENT
		Muḥammad marries Zaynab bint Ǧahš after her divorce from Zayd b. Ḥāriṯa. Zaynab's mother was a paternal aunt of Muḥammad.
	5 Ḏū al Qa'da	Siege of Madīna which is protected by hastily dug trenches (*ḫandaq*).
		Extermination of the Banū Qurayẓa, a Jewish tribe.
	5	Muḥammad takes Rayḥāna bint Zayd, a Jewess of the Banū Qurayẓa, as his concubine. She died before Muḥammad in 632.
	6	Muḥammad marries Umm Ḥabība bint Abī Sufyān, after his return from Ḫaybar. She was the widow of 'Ubaydallāh b. Ǧahš with whom she had fled to Abyssinia.
		Muḥammad takes the Jewess Ṣafīya bint Ḥuyayy as concubine. She was captured at Ḫaybar but freed when she professed Islam.
628	6 Ḏū al Qa'da	Opposition of the Makkans to Muḥammad making the pilgrimage and pact of Ḥudaybīya.
	7	Muḥammad takes the Copt, Māriya bint Sam'ūn, as his concubine, after she had been offered to him by the ruler of Egypt. Her sister Sīrīn was given to Ḥassān b. Ṯābit.
		Muḥammad marries Maymūna bint al Ḥāriṯ.
	7 Ṣafar?	Conquest of the oases of Ḫaybar and Fadak.
629	7 Ḏū al Qa'da	Muslims make the 'Umra al Qaḍiyya (the litigation 'Umra).
		Ibrāhīm is born to Muḥammad by Māriya the Copt. The birth took place shortly after Muḥammad's return from al Ṭā'if which is dated as the end of Ḏū al Qa'da or the beginning of Ḏū al Ḥiǧǧa.

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[11] Some sources say she married Muḥammad in 625.

	8 Ğumādā I	Muslims beaten by Heraclius' forces at Mu'ta.
		Breaking of the pact of Ḥudaybīya.
630	8 Ramaḍān	The capture of Makka and Muḥammad's entry.
AD	AH	EVENT
		Destruction of the idols in the Kaʿba and the sanctuary declared off-limits to non-Muslims (*Ḥaram*).
631	9 Šaʿbān	Death of Umm Kulṯūm bint Muḥammad.
	9 Ḏū al Qaʿda	Abū Bakr leads the pilgrimage (*ḥağğ*) to Makka.
632	10 Ḏū al Ḥiğğa	Muḥammad leads the "Farewell Pilgrimage" *Ḥiğğat al Wadāʿ*, during which he forbids the intercalary calendar system.
		Ibrāhīm b. Muḥammad dies at the age of 18 months or two years.
	11 Rabīʿ I 09	Muḥammad falls ill and delegates Abū Bakr to lead the prayers.
	11 Rabīʿ I 12	Muḥammad dies and is buried in Madīna.

GLOSSARY

Abraha	South Arabian leader who is famous in Islamic tradition for his attempted attack on *Makka* in order to destroy the *Ka'ba.*[12]
Abū	"Father of" used in names - see *Kunya* below.
Abū Bakr	One of Muḥammad's first and closest companions, as well as his father-in-law through the marriage with *'Āiša.* He accompanied Muḥammad on his escape from *Makka* and when Muḥammad fell terminally ill, he was chosen to lead the community prayers. He was the first Caliph to succeed Muḥammad and ruled, for about two years, until his death in AD 634.
'Āiša	Daughter of *Abū Bakr* who was married to Muḥammad while he was still in *Makka.* Due to her youth, the marriage was not consummated in Makka, but several years later in Madīna, in AH 1 or 2.
'Alī	Muḥammad's son-in-law through his marriage with Fāṭima. He was the last of the *Ḫulafā' al rāšidūn*, reigning as Caliph (AH 35 - 40) until his assassination.
Anṣār	Literally "helper" or "protector", but in Islam it has taken on the special meaning of "Muḥammad's followers in Madīna".
Bint	"Daughter of" used in names to indicate the name of the father.
Banū	Plural of *Ibn* meaning "sons" but generally used to mean the name of a tribe, as in Banū Qurayẓa. This is the nominative form of the word. In the accusative and genitive it becomes Banī.
Badr	The place where a victory was gained over the *Qurayš.*

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[12] All words written in *italics* are explained in the glossary.

Black Stone	A Stone placed in the corner of the Kaʿba, said to contain the footprint of Abraham. Pilgrims attempt to touch it while walking round the Kaʿba.
Buḫtnaṣṣar era	Arabic name for the Nabonassar era which was based on the astronomical Canon of Ptolemy, this era begins on 26 February 747 BC.
Ḍaʿīf	In the study of *ḥadīṯ*, the judgement that there are doubts about either their contents or the transmitter.
Ḍū al Ḥiğğa	The twelfth month of the *Hiğra* year, "was called so, because in it people performed the *Ḥağğ* or pilgrimage".[13]
Ḍū al Qaʿda	The eleventh month of the *Hiğra* year, "was called so, because in it people stayed in their homes".[14]
Ğāhilīya	The time of ignorance or the time before Islam.
Ġazwa	Attack or campaign. In the context of this study, one of the campaigns fought by the Muslims from Madīna.
Ğinn	Invisible beings, either harmful or helpful that interfere in the lives of mortals. "And the *ğānn*, He created from a blend of fire."[15] And "there are among us those who are righteous and those who are not; we follow divergent paths."[16]
Ğumādā	The two Ğumādās, the fifth and sixth months of the *Hiğra* year, stand either for cold, in which case they would have to fall in

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[13] Abū al Rīḥān Muḥammad b. Aḥmad al Bīrūnī, *The Chronology of Ancient Nations: An English version of the Arabic Text of the Athār-ul-Bākiya of Albīrūnī or Vestiges of the Past collected and reduced to writing by the author in AH 990-1, AD 1000*, trans. Eduard C. Sachau (Frankfurt/Main: Minerva Verlag GMBH, 1984), 71.

[14] Ibid.

[15] Qur'ān 55:15.

[16] Qur'ān 72:11.

	winter or for dryness, in which case they follow the Spring months.[17]
Ḫadīğa bint Ḫuwaylid	Muḥammad's first wife who died before the Hiğra. She bore him *Zaynab*, *Umm Kulṯūm*, *Ruqayya*, *Fāṭima*, al Qāsim, al Ṭāhir and al Ṭayyib. The three sons died before Islam.
Ḥadīṯ	"Traditions" about the life and teaching of Muḥammad, second only in importance to the *Qur'ān*.
Ḥağğ	The Pilgrimage to *Makka*, one of the "Pillars of Islam",[18] which every able-bodied Muslim must make at least once in his/her life-time if possible.
Ḥalal	That which is permitted.
Ḫandaq	"Trench", the name given to the siege of *Madīna* by Makkan forces (c. AD 627), when trenches were dug to protect the town.
Ḥarām	That which is forbidden to a Muslim.
Ḥaram	A place considered sacred by Muslims, forbidden to non-believers. *Makka* and *Madīna* are such sites. Though the Qur'ān specifically says that it is polytheists who are forbidden access (9:28), the rule is generally applied to all non-muslims.
Ḥasan	In the study of *ḥadīṯ*, the judgement that a tradition has a slightly weak *isnād* or is of questionable orthodoxy.

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17 A. P. Caussin de Perceval, "Mémoire sur le calendrier arabe avant l'islamisme," *Journal Asiatique* 4 (1843): 342-345.

18 The others being *al ṣalāt*: "Prayer", five times a day, *al zakāt*: "Compulsory almsgiving", especially at the end of Ramaḍān, *al ṣawm*: "Fasting" from dawn to dusk during the month of Ramaḍān and *al ğihād*: Effort to overcome that which keeps one from God. This effort can be both interior and exterior, In the latter case, it has come to take the more specific meaning of "Holy War", to favour the expansion of Islam by the use of arms. This interpretation is rejected by moderate Muslims.

Ḥiğğat al Wadāʿ	Literally the "Farewell Pilgrimage", is the Pilgrimage made by Muḥammad in AH 10, a few months before he died.
Hiğra	"Flight", the term used to describe Muḥammad's departure from *Makka* to *Madīna* following the persecution of the first community of Muslims by the Makkan population. When the Muslim community wished to fix its calendar, it was decided to count from the first month of the year in which Muḥammad left *Makka* for *Madīna*, even though the flight was supposed to have taken place during the third month of that year.
Al Ḫulafā' al Rāšidūn	"The Orthodox Caliphs", a title give to the first four Caliphs, *Abū Bakr*, *ʿUmar*, *ʿUṯmān* and *ʿAlī*.
Ibn	"Son of", which is often written "b." when listing full names.
Iğmaʿ	Consensus of the legal authorities, one of the sources of Islamic law.
Imām	"In front of", the name given to the person who leads communal prayers by praying in front of the group. Also the title given to those who succeeded ʿAlī and his family in the *Šīʿī* tradition.
Intercalation	When describing calendars, addition of days or months to adjust the calendar.
Isnād	The chain of names of those who had passed on the tradition which makes up the authority of a *ḥadīṯ*. The chain begins with the person furthest removed from the life of Muhammad to end with that of a Companion, Muhammad, and in rare cases, God.[19] This is also known as "silsila" or "chain".
Kaʿba	The shrine in *Makka*, said to have been built by the Prophet Abraham. Some traditions talk of the reconstruction of the shrine

[19] When one can infer from the text that whatever is told came from God.

during Muḥammad's life. The story tells us that there was a lot of discussion about who should replace the Black stone and that Muḥammad solved the problem by placing the Stone on a cloak and having representatives of the main tribes lift it into place. This building housed the Makkans' idols until *Makka* was taken by Muḥammad in AH 8, at which time all the idols were destroyed. The Kaʿba was a place of pilgrimage, protected by the custom of having sacred months during which no fighting was allowed.[20]

Kunya	The name given to a parent after the birth of the first male child containing the element "Father/Mother" of *(Abū | Umm)* and the name of the child.
Madīna	Originally known as Yaṯrib, it became Muḥammad's home after he fled *Makka.*
Makka	Birth-place of Muḥammad, important as a trading centre and a place of yearly pilgrimage. Muḥammad was forced to flee, along with the first community of believers, following persecution by the Makkan leaders.
Maʿrifat al riğāl	Early biographical studies of transmitters of *ḥadīṯ* known as "the knowledge of the men", which looked at the integrity of persons in a *ḥadīṯ* chain, as well as whether they could have known the persons who precede or follow them in the *isnād.*
Matn	The body of text which follows the *isnād* and contains the teaching of a *ḥadīṯ.*
Matrūk	A doubtful *ḥadīṯ* said to have originated from one weak source.
Mawḍūʿ	A *ḥadīṯ* considered to be completely false.

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20 See *Ḏū al Qaʿda, Ḏū al Ḥiğğa* and *Muḥarram.*

Mudrāğ	A doubtful *ḥadīṯ* to which words are considered to have been added.
Muḥarram	First month of the *Hiğra* year. According to some sources this name was only applied to *Ṣafar I* at the beginning of Islam.[21]
Musnad	A collection of *ḥadīṯ* attributed to one transmitter.
Muwaṭṭa'	As in the Muwaṭṭa' of Mālik, is the earliest extant collection of *ḥadīṯ*.
Nāsi'	A term used to describe part of the calendar practice of the pre-Islamic community which probably consisted of adding months to the lunar calendar.
Negus	The Emperor of the Ethiopians. According to Arab sources, Ella-Seham was the ruler at the time when Muḥammad started preaching. However, Ethiopian sources refer to the king as Adriaz, who ruled the country for 20 years (EC[22] 603-623). "At this time arose the infidel Mohammad in the East, occupied all countries, killed the magicians in Egypt, burned their books and came as far as Habab the land of the Sudan. But he could not subdue the Empire of Ethiopia, for God kept it in His hands."[23] The Emperor's son Gitmay, whose throne name was Asfer, succeeded him and reigned for 15 years (EC 623-638).
Qibla	The direction which the faithful face when praying. Before the *Hiğra* it is not clear if Muḥammad had a clearly defined qibla. In

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[21] A. P. Caussin de Perceval, *Essai sur l'histoire des Arabes: avant l'Islamisme, pendant l'epoque de Mahomet, et jusqu'à la reduction de toutes les tribus sous la loi musulmane* (Paris: Librairie de Firmin Didot Frères; 1847), I, 243-244.

[22] The Ethiopian calendar which is approximately eight years behind the Julian calendar.

[23] *Ethiopian Chronicle* (an unpublished manuscript, the property of Qese Gebez Tekle Haimanot of Aksum), 63. Quoted in Sergew Hable Sellassie, *Ancient and Medieval Ethiopian History to 1270* (Addis Ababa, 1972), 185.

	Madīna the early Islamic community seems to have adopted Jerusalem as its qibla. This was changed by divine revelation, probably in Ša'bān AH 2. The change in the Qibla is remembered in the Qur'ān 2:144.[24]
Qiyās	Comparison or allegory, one of the sources of Islamic law.
Qur'ān	The Islamic Holy Book, revealed to Muḥammad.
Qurayš	The leading tribe of Makka, which tried to suppress Islam.
Rabī'	Third and fourth months of the *Hiğra* year. Rabī' meaning "greenery" the two months with this name had to have been rainy; when there was vegetation, the spring.[25]
Rağab	The seventh month of the *Hiğra* year. "As for the sacred month of Rağab, it was always isolated in the middle of the year, for which reason it was called "al farḍ" the unique. It was also called "al aṣamm," the dumb because of the silence which followed the war cries and sounds of arms. It was considered the most inviolable of the sacred months, and consecrated to fasting, penance and the *'Umra*, which could also be carried out in other months. Perhaps the descendants of Modhar gave Rağab this special respect, because it was also called Rağab of Modhar. The month was also known as *al Muḥarram*. This name was only applied to *Ṣafar I* at the beginning of Islam."[26] It "was called so, because in it people formed the intention of travelling, there being no fear of the evils of war. For "ruğba" means a thing by means of which a tree is

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[24] "Often We see you turn your face towards heaven. We will turn you towards a Qibla which will please you. Turn your face in the direction of the Sacred Mosque! Wherever you may be, turn your faces in its direction."

[25] Caussin de Perceval, "Mémoire sur le calendrier arabe avant l'islamisme," 342-345.

[26] Caussin de Perceval, *Essai sur l'histoire des Arabes: avant l'Islamisme*, I: 243-244.

	propped up, and hence people say, 'a propped up (murağğab) palm-tree which bears a heavy load of fruit"[27]
Rakʿa	"Bowing": a part of the ritual prayer during which the Muslim bows forward from the standing position and places his/her hands on his/her knees, before returning to the upright position. This is usually followed by two "kneelings" or "prosternations" (see *Sağda*). Three of the main prayers are made up of four *rakʿa (pl. rakʿāt)*, one of three and one of two.
Ramaḍān	The ninth month of the *Hiğra* year. "Ramaḍān means great heat, which can only mean the hottest of the months which would fit into the scheme of the four previous months."[28]
Šaʿbān	The eighth month of the *Hiğra* year "was called so, because in it the tribes were "dispersed."[29]
Sacrilegious War	A war which broke out when Muḥammad was still a youth. So called because it happened during one of the sacred months. There was much discussion about this war, because it was important for the community to know how old Muḥammad was when it took place - was he old enough to be legally responsible or not - and to what degree did he participate in the fighting - actually fighting or simply collecting enemy arrows for members of his family?
Ṣafar	Second month of the *Hiğra* year. During it "people used to procure their provisions, going out in a company of men who were called Ṣafariyya."[30] *Muḥarram* was also known, at some stage, as Ṣafar I.

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[27] al Bīrūnī, *The Chronology of Ancient Nations*, 71.

[28] Caussin de Perceval, "Mémoire sur le calendrier arabe avant l'islamisme," 342-345. al Bīrūnī says, "... because of the stones being *roasted by* the intense heat." *The Chronology of Ancient Nations*, 71.

[29] Ibid.

[30] Ibid., 70.

Sağda	"Kneeling" or "prosternation" where the Muslim goes from the standing position to the kneeling one, then bows forward to touch the ground with the forehead. S/he then returns to the kneeling position, sitting back on her/his heels.
Ṣaḥābi	A "Companion" of Muḥammad. A classification used in the study of *ḥadīṯ* to define any person who knew or met Muḥammad, no matter how briefly - there are some 123 Companions accepted in the study of *ḥadīṯ*.[31]
Ṣaḥīḥ	In the study of *ḥadīṯ*, the judgement that a tradition is orthodox and contains no weaknesses.
Sarīya	Another name given to Muslim campaigns, used exclusively for battles in which Muḥammad did not take part.
Šawwāl	The tenth month of the *Hiğra* year, "was called so, because of the increasing and the decreasing of the heat".[32]
Shāhnāma	Epic poem about the Persian kings from the beginning of history up to the beginning of Islam. The work contains some 60,000 verses.
Sīra	Early biographies of Muḥammad, the earliest of which contained mainly accounts of the campaigns and battles fought by Muḥammad and the early Islamic community.
Šī'ī	From the Arabic root which has the meaning of "those who follow", "disciples." In this group the meaning is more specific, describing those who believe that *'Alī*, Muḥammad's son-in-law, was his rightful successor rather than *Abū Bakr*, *'Umar* or *'Uṯmān*

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[31] See Muḥammad Zubayr Ṣiddīqī, *Ḥadīth Literature: Its Origin, Development & Special Features* (Cambridge: The Islamic Texts Society, 1993), 15-18.

[32] al Bīrūnī, *The Chronology of Ancient Nations*, 71.

who preceded him as Caliph. This succession, according to šī'ī doctrine, was then passed to his sons and a series of *Imāms.*[33]

Sunna — In the time of the *Ğāhilīya* this was traditional practice. In the Qur'ān, God's sunna was the punishment meted out to those who received the prophets with scorn or disbelief. In the ḥadīṯ sunna took on the meaning of "the actions and sayings of Muḥammad" which became a guide for all Muslims. With the divisions which arose around the role of 'Alī and whether he, and his descendants, should have been Muḥammad's heirs, Sunna became opposed to *Ši'a.*[34]

Sunnī — A person who follows the traditions handed down by Muḥammad and accepts the *qur'ān, ḫulafā' al rāšidūn, sunna, qiyās* and *iğma'* as the sources of Islamic law. Some would call them Orthodox Muslims as opposed to the *Ši'ī* (see below), but this description is less acceptable than when used in the Christian context, where "Orthodox" is the accepted title of one of the Christian churches. In Islam, both the Sunnī and the Šī'ī claim to belong to the orthodox branch of Islam.

Sūra — A section or chapter of the *qur'ān* of which there are 114 arranged by order of length.

Ṭabaqāt — Early collections of traditions ordered according to the names of the transmitters.

Ṭābi'ū al Ṭābi'īn — The "Followers' Followers", or those who had known and received *ḥadīṯ* from the *Ṭābi'ūn.*

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[33] See *The Encyclopaedia of Islam: New Edition* (Leiden: E. J. Brill, 1975-). (*E.I.*^{2}) s.v. SHī'a.

[34] See *E.I.*^{2} s.v. Sunna.

Ṭābiʿūn	The "Followers" were those who had not known Muḥammad, but had known one or several Companions. This too is a classification used in the study of *ḥadīṯ*.
ʿUmar ibn al Ḫaṭṭāb	A companion of Muḥammad, as well as his father-in-law through Muḥammad's marriage with his daughter Ḥafṣa. He succeeded *Abū Bakr*, in AD 634, as second Caliph and ruled until his assassination in AD 644.
Umm	"Mother of" used in names - see *Kunya* above.
ʿUmra	The lesser pilgrimage carried out at any time, except during the month of *Ḏū al Ḥiǵǧa*.
ʿUmrat al Qaḍiyya	An event during the *ǧāhilīya*, used to date subsequent happenings in the same way that the *Year of the Elephant* became a chronological marker for the Makkans.
ʿUṯmān b. ʿAffān	Third Caliph (AH 23 - 35).
Yamāma	Most famous of the battles which the Muslims had to fight against the false prophets who claimed to succeed Muḥammad as the new prophet of Islam. Musaylima's revolt was put down early in AD 633. This battle is often cited as being the reason for *Abū Bakr* compiling an official text of the *Qur'ān*, as many of the companions who had learned the text were killed at the battle.[35]
Yaṯrib	The pre-Islamic name for *Madīna*.
Year of the Elephant	The year in which *Abraha* is said to have tried to attack *Makka* in order to destroy the *Kaʿba*. Also said to be the year of Muḥammad's birth.

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[35] See Chapter the section on the Qur'ān below, for a more detailed discussion of the subject.

Zamzam	A well next to the *Ka'ba* said to have appeared miraculously to save Ishmael, Abraham's son, and rediscovered by *'Abd al Muṭṭalib*, Muḥammad's grandfather.

INTRODUCTION

In the search for more knowledge about the life of Muḥammad, we are faced with the dilemma of defining what exactly we mean by knowledge. It is a question which has been faced by historians over the ages. If the problem has always been more acute when applied to the great historical figures: Alexander, Bonapart.... it is even more delicate when the person is also a key religious figure: the Buddha, Christ and of course, Muḥammad. Though what follows can be applied equally to most religious figureheads, we will refer simply to Muḥammad as he is the subject of this research.

The way that Muḥammad is perceived depends very much on the state of mind of the researcher: a Muslim will talk of the "Prophet of God, God grant Him peace and salvation", because Muḥammad's status as the last of the Prophets is a key part of his/her faith. This is not the case for the non-believer, or believer in another faith.

Faith has probably been the greatest single cause of war and hatred in the history of the human race and even now, so-called inter-faith dialogue is plagued by misconceptions about the difference between faith and science even though believers of different faiths would probably agree that faith is an "attitude of belief which goes beyond the available evidence"[36] and therefore by definition cannot be proved, while the "theories of science aim at accounts of the world which depend on no particular perspective on the world and no particular type of observer..."[37] which can be verified if the rules of the system are adhered to. Many believers have great difficulty in accepting this difference and will attempt to use what they *know in faith* as a tool or weapon with which they can negate another faith. A Christian or a Muslim cannot use his/her faith to negate the faith of another as the different faiths are mutually exclusive and therefore not to be compared.

The story of Muḥammad, as we know it, is made up of history and myth, where *history* "has as its subject-matter the actual human past, the latter being viewed from a universal or synoptic

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36 William L. Reese, *Dictionary of Philosophy and Religion: Eastern and Western Thought.* (Atlantic Highlands, N.J.: Harvester Press, 1980), *s.v.* faith.

37 Ted Honderich, *The Oxford Companion to Philosophy* (Oxford: Oxford University Press, 1995), *s.v.* science, art and religion.

viewpoint and studied with the aim of disclosing the overall workings and significance of the historical process as a whole",[38] while *myth* is "a narrative account which is taken to be true, but not known to be true".[39] The difference between the two can be very slight, as myth is often based upon fact, but as long as the underlying historical reality has not been demonstrated it remains a myth. A work of historical research cannot pass judgement on myths surrounding a person or event except to acknowledge that the underlying historical event *cannot* be corroborated using historical methodology.[40]

Though modern researchers often have an advantage over their medieval counterparts, because of the tools at their disposal, they suffer the great disadvantage of rarely having clear-cut, unaltered material with which to work. The Hiğra calendar has been the subject of intense discussion and speculation since the life-time of Muḥammad. Most chronicles of the life of Muḥammad have adopted one or another of the theories about what calendar system was in use during his life and if or when he ordered or was inspired to order the system to be changed.[41] In this context, what is regarded as the generally perceived opinion of historians or previous researchers cannot be accepted without question, as many publications do little more than collect and reproduce the opinions of previous authors.

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38 Ibid. *s.v.* history.

39 Reese, *Dictionary of Philosophy and Religion, s.v.* myth.

40 A good example of this are the "astronomical events" recorded in the Ḥadīṯ. Eclipses are mentioned and they can be verified by comparing the accounts with astronomical calculations of what the eclipse must have been like. On the other hand, there are also accounts of the Moon having been "split", which is an astronomical impossibility so there is no means of verifying this either by astronomical calculation or independent historical accounts, and so the researcher can only admit that s/he is unable to verify their historicity. This is not to say that the accounts should be rejected out of hand: In 1990 the Full-Moon was seen in Northeast England with a narrow band of cloud, seen edge-on, splitting it in two. If the sky had been darker and the cloud less obviously a cloud, the uninitiated could have supposed the Moon to have been split. There is no scientific way of verifying this event which was told to me by Professor Stephenson. If, as in the case of Muḥammad we are talking more of the miraculous or divine signs, then by definition, they cannot be corroborated by scientific methodology. A "lunar event" is reported in the Chronicle of Melrose: "...[4 April 1216] ... when the moon was 13 days old, ... as this convert was looking at the moon, (which was at this time full and round,) at that very time he saw, as it were, a black and dusky rope cutting the moon into two halves. The blackness of this rope diffused itself over that half which was towards the north, and made it become darker and duskier than the other part; whereupon, in the twinkling of an eye, that half which had lost its colour appeared to cut itself off and separate itself from the other portion, from which it became detached about the eighth part of a mile; and so great was the violence with which that paler half of the moon was separated and plucked asunder from the other, that it emitted sparks, like a dragon when it is flying through the sky...." J. Stevenson, *The Church Historians of England* (London: Seeleys, 1856), IV/1, 162-166.

41 As we will be going into the question in detail in a later section, we will limit ourselves to saying that the discussion revolves round the question of whether the calendar was purely lunar or luni-solar in the early days of Islam, and if the latter, when it reverted to being purely lunar.

A Muslim will always have difficulty researching questions related to his/her faith as s/he will often face the wrath of other Muslims who misunderstand what s/he is attempting and can easily accuse his/her scientific approach as an attack on their faith.[42] This pressure from other believers, combined with the "emotional" content of the researcher's own faith, will inevitably lead to hesitations and doubts, but the unavoidable question will always be on what verifiable grounds can any of the theories be based.

A Christian also faces the danger of allowing his/her faith to colour his/her judgement when studying the historical facts surrounding Islam: applying rigorous scientific criticism to stories about Muḥammad, while negating the necessity of such rigour when looking at similar stories in the life of Christ is an all too familiar pattern.[43]

In the search for historical data about the life of Muḥammad, we have, obviously to start with the principal sources, the Qur'ān itself as the recognised "Word of God" in Islam and the Ḥadīṯ (traditions about Muḥammad),[44] but we must not neglect other possible sources: archaeology, contemporary historical texts, biographies, astronomy and astrology.

Contemporary history

Muḥammad did not live in a political vacuum and so we can hope to cross-reference events in his life with known, historically dated, events in the lives of other rulers or dynasties. This data will be all the more authoritative if it provides independent datings, or can be found to refer to Muḥammad. The possible sources would be Ethiopian,[45] South Arabian, Roman, Persian and Jewish.

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[42] The growth of scientific exegesis in the Christian faiths was not without its problems, and Islam is not immune from similar difficulties.

[43] See for example Abd oul Masih' al Ghalwiry, *Les Miracles de Mahomet: D'après le Koran et la Tradition* (Alger: Maison-Carrée, 1937), passim.

Let it not go unsaid, however that the opposite can be equally true. This has to be stated because such seemingly one-sided statements have been used to illustrate that yet one more "Christian" author recognises how biased Christians have been against Muslims, without once acknowledging that the same is true of many Muslims writing about Christianity.

[44] "Ḥadīṯ" is used to refer to the body of tradition while "ḥadīṯ" is used for individual traditions.

[45] With the account of the first believers who fled to seek protection from the Negus or Ethiopian King, or even more precise information about the different rulers and the dates of their reigns.

Astrology

The study of astronomical phenomena, during the sixth century and for many centuries to follow, would be better termed astrology. The stars and celestial bodies were studied for the portents they contained. One such portent was the "Great Conjunction" of Saturn and Jupiter, which some saw as predicting Muḥammad's birth. Numerous horoscopes have been drawn for the different events in his life and we have to ask ourselves if any conclusions of historical value can be drawn from them.

Sunnī and Šī'ī

Given the concentration in this study on the Qur'ān and Ḥadīṯ, we have also to remind ourselves that there are two main schools of Islamic thought and that their interpretation of events and the roles of different "actors" in the early history of Islam vary according to the school.[46]

Conclusion

Once the more obvious sources have been studied, we still have to be aware that genuine historical fact could be hidden in other texts: non-orthodox readings from the Qur'ān, ḥadīṯ not included in the officially recognised lists, biographies, legends, poetry.... The problem will always be one of recognising the value of such pieces. The first step towards recognition lies in accepting the possibility of their existence.

Throughout this study we will have to distinguish between "historical events" and "historical events which can be given a chronological definition". Interesting and necessary as it is, to discuss the historical background to any given event in the life of Muḥammad, within the scope of this study it is meaningless unless it can help date it.

Limiting the scope of the study more specifically to the Qur'ān and Ḥadīṯ, has not eliminated the need for certain information to be collected together, for reference purposes, in one work. The astronomical and calendrical information contained in the appendices is intended as a starting point for those who may wish to continue and improve the present study.

The very reason for this study is the confusion which reigns concerning the calendar which was in use in the ğāhilīya and the early years of Islam. "The fundamental basis of this confusion is the

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[46] See Glossary for more details.

fact that there are two distinct and different theories regarding the nature of the Arab calendar as current in this decade [AH 1-10]. One theory asserts that, until intercalation was forbidden at the time of the Farewell Pilgrimage, a luni-solar calendar was observed and a thirteenth month was intercalated at intervals for the purpose of keeping the moon calendar in conformity with the seasons determined by the sun. The other maintains that the Arab calendar was always a purely lunar reckoning in which the months and the festivals always receded from one season to another."[47]

The aim of this research is to define the calendar and use it to find a chronological fix for the life of Muḥammad and if this proves to be impossible, to prepare the terrain for future research.

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[47] Amīr ʿAlī Hāšim, "The First Decade of Islam: A Fresh Approach to the Calendrical Study of Early Islam," *The Moslem World* 44 (1954): 126.

CHAPTER ONE : Calendars

Any attempt to better define the chronology of Muḥammad's life will obviously have to investigate the Hiğra and pre-Hiğra calendars and part of the process of understanding them will entail working out how they related to other calendars which might have been used either to date events mentioned in Islamic and/or ğāhiliyya chronicles, or served as a model for one or the other. Principal among them are the South Arabian and the Jewish calendars. Nor should we forget the Julian calendar, which as Europeans, we use as a reference. It is not sufficient to study the facts and theories about these different calendars, we also have to understand the different eras related to them which often figure in documents concerning, or in some way connected to Islamic history: The Nabonassar,[48] Seleucid[49] and Yezdegered[50] eras, as well as some more specifically Arab ones which we will see when looking at the pre-Hiğra calendar.[51]

That the Arabs had their calendar for hundreds of years before the birth of Muḥammad is usually accepted by the majority of scholars; problems arise when trying to define exactly what form the calendar took.[52] It is also worthy of note that though the calendar does seem to have existed, the Arabs were in the habit of dating events according to their own eras.

> "... the Ishmaelite Arabs... used to date from the construction of the Kaʿba by Abraham and Ishmael till the time when they were dispersed and left Tihāma. Those who went away dated from the time of their exodus, whilst those who remained in the country dated from the time when the last party of the emigrants had left. But

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48 Based on the astronomical Canon of Ptolemy, this era begins on 26 February 747 BC and is known as the *Buḫtnaṣṣar era* in Arabic.

49 For the Jews, this era is known as the Era of the Contracts and begins on 1 October 312 BC, while the Christian Syrians know it as the Greek or Alexandrine Era which began on 7 February 311 BC and the Muslims call it the Era of the Man with Two Horns (*Ḏū al Qarnayn*) which began on 1 April 311 BC.

50 Used by the Persians this era begins on 16 June AD 632, date of the death of the last of the Sassanid kings, Yazdegered III.

51 Many different eras were used in Palestine and Arabia, which we will not consider in this work, but whose existence researchers need to be aware of. See Yiannis E. Meimaris, "Chronological Systems in Roman-Byzantine Palestine and Arabia: The Evidence of the Dated Greek Inscriptions," *ΜΕΛΕΤΗΜΑΤΑ* 17 (1992): 394-395.

52 The main questions lie in whether the calendar was, at some time luni-solar, or always purely lunar. Were intercalary months used? What were the months called? When, if ever, were changes made? When did the year begin?

afterwards, after a long course of time, they dated from the year when chieftainship devolved upon ʿAmr ben Rabāʿa, known by the name of ʿAmr ben Yaḥyā, who is said to have changed the religion of Abraham, to have brought from the city of Balqā the idol Hubal, and to have himself made the idols 'Isāf and Nā'ila. This is said to have happened at the time of Shāpūr Dhū-al'aktāf.... Afterwards they dated from the death of Kaʿb ben Lu'ayy - till the *Year of Treason*, in which the Banū-Yarbūʿ stole certain garments which some of the kings of Ḥimyar sent to the Kaʿba, and when a general fighting among the people occurred at the time of the holy pilgrimage. Thereupon they dated from the Year of Treason till the *Year of the Elephants*, in which the Lord, when the Ethiopians were coming on with the intention of destroying the Kaʿba, brought down the consequences of their cunning enterprise upon their own necks, and annihilated them. Thereupon they dated from the era of the Hijra."[53]

The South Arabian Calendar

Our interest in this calendar stems from the story of the attempted invasion of Makka by Abraha in the Year of the Elephant.

Though much is known about the calendar(s) in use in South Arabia, there is still some discussion about whether their era began in 109 or 115 BC.[54]

We have a relatively good idea of the months[55] and their approximate concordance in the Julian calendar:

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[53] al Bīrūnī, *The Chronology of Ancient Nations*, 39.

[54] Smith also proposes that era year 640 be equated with AD 522, which would mean that the era began in 118 BC. See, Sidney Smith, "Events in Arabia in the 6th Century A.D.," *BSOAS* 16 (1954): 456.

[55] Alfred F. L. Beeston, "The Himyarite Problem," in *Proceedings of the Eighth Seminar for Arabian Studies, 3 July 1974, The Oriental Institute, Oxford* (London: Seminar for Arabian Studies, 1975): 1-7.

Alfred F. L. Beeston, "New Light on the Himyaritic Calendar," *Arabian Studies* 1 (1974): 1-6.

Christian Robin, "Le Calendrier Himyarite: Nouvelles Suggestions," *Proceedings of the Fourteenth Seminar for Arabian Studies, 22 July 1980, Oriel College, Oxford* (London: Seminar for Arabian Studies, 1981): 43-53.

ḏ-Tbtn[56]	April
ḏ-Mbkrn[57]	May
ḏ-Qyẓn[58]	June
ḏ-Mḏr'n[59]	July
ḏ-Ḫrfn[60]	August
ʿln	September
ḏ-Ṣrbn[61]	October
ḏ-Mhltn[62]	November
ḏ-'ln	December
ḏ-D'wn	January
ḏ-Ḥltn	February
ḏ-Mʿn	March

We will have to return to this calendar and the South Arabian inscriptions when considering the events of the Year of the Elephant and their possible dating.

The Jewish Calendar

Like the traditional Hiğra calendar, the Jewish calendar, and long before that, the Babylonian calendar, was based upon the sighting of the new crescent by reliable witnesses.[63] Despite the fact that sighting of the new crescent was necessary in order to begin the new month, the Jewish calendar also stayed more or less synchronised with the solar cycle because extra months were added according to a fixed pattern. Thus the Jewish calendar is described as luni-solar.

In AD 358 the calendar was reformed by Rabbi Hillel II.[64] The reform which he started was probably completed after the fifth century. It is known, for example, that some communities in

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56 With the idea of "firmness" or "collecting water". Alfred F. L. Beeston, *Epigraphic South Arabian Calendars and Dating* (London: Luzac & Co., 1956): 17.

57 With the idea of "the first rains of Spring"? Ibid. 2, and A de Biberstein Kazimirski, *Dictionnaire Arabe Français* (Beyrouth: Librairie du Liban, 1860), *s.v. bkr.*

58 With a meaning of "middle of Summer"? See Beeston, "New Light on the Himyaritic Calendar," 2 and Kazimirski, *s.v. qyẓ.*

59 The month of "sowing". Beeston, *Epigraphic South Arabian Calendars and Dating*, 17.

60 The time when "fruit is collected". See Beeston, "New Light on the Himyaritic Calendar," 2 and Kazimirski, *s.v. ḫrf.*

61 Indicating a late autumn or early winter harvest. Beeston, *Epigraphic South Arabian Calendars and Dating*, 17.

62 Containing the idea of "slackening" in agricultural activities. Ibid.

63 Sherrard Beaumont Burnaby, *Elements of the Jewish and Muhammadan Calendars: with Rules and Tables and Explanatory Notes on the Julian and Gregorian Calendars* (London: George Bell & Sons, 1901), 10-39.

64 Tradition would have it that he was a direct descendant from Gamaliel who presided the Sanhedrin when the Apostles and Paul were brought before it. This would seem to be untrue. What is known is that Rabbi Hillel became president of the Sanhedrin when he was about eighty years old. The calendar reform was carried out to allow Jewish communities, especially those at a distance from Jerusalem, to fix the dates of the more important feasts accurately. Ibid., 15-16.

Palestine and Babylonia continued to look for the new crescent till the middle of the fourth century.

In the "standardised" Jewish calendar, there are two main types of year, the *Common* year of twelve months and the *Embolismic* year of thirteen. Both these years can be either "regular", "deficient" or "abundant". In the case of the Common year, this means that it can contain either 354, 353 or 355 days, while the Embolismic year contains respectively 384, 383 or 385 days. There are seven Embolismic years in the nineteen-year cycle of the Jewish calendar.

The rules governing which of the years are used depend both on astronomical and liturgical reasoning, which we do not need to explore here.[65] Suffice to say that the Jewish calendar, and its concordance with the Julian calendar, for the period of Muḥammad's life can be calculated, supposing that the Jewish community of Madīna was using Rabbi Hillel's method and not still observing the new crescent.[66]

The months of the Jewish calendar are: Tishrī, Marḥeshwān, Kislêw, Ṭêbeth, Shebhat, Adhār, Nīsān, Iyān, Sīwān Tammūz, Ābh, 'Elul and the intercalary month, veAdhār, which follows Adhār in the embolismic years.[67] There are two Jewish calendars contained in the one set of months: the civil calendar which follows the order given above with the intercalary month in the middle of the year, and the religious calendar in which the year begins with Nisān and the intercalary month comes at the end of the year. The fact that the intercalary month comes somewhere other than the end of the year is an indication that the beginning of the year has moved, just as the extra day

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65 Some extra detail is needed in order to understand the table of dates in Appendix II below pp. 114ff. The beginning of each month is worked out from the *Molad* which in turn is calculated from the mean value of lunation in the Jewish computation. See Burnaby, *Elements of the Jewish and Muhammadan Calendars*, 63. This is not the only factor which enters into fixing the beginning of the new year. As the months follow in a regular sequence, and certain feasts cannot fall on certain days of the week (for example, 15 Nīsān cannot fall on a Monday, Wednesday or Friday), it is necessary to adjust the beginning of the year in order to make allowance for these factors, hence the "deficient" and "abundant" years.

66 I am unaware of any documents or studies which allow us to decide which form of the Jewish calendar was in use in the Jewish communities of the region. Later Islamic writings and studies supposed that the "standardised" calendar was in use. See Appendix 1 for a table of Jewish calendar dates from AD 550-650. For the period from AD 610-650 the tables are taken from Burnaby, *Elements of the Jewish and Muhammadan Calendars*, 302-303, while the earlier dates have been calculated following the explanations given in Burnaby, *Elements of the Jewish and Muhammadan Calendars*, 63-102.

67 See the table in Appendix II, Sequence of Months in the Jewish years, 117.

added to February in the Julian and Gregorian calendars, is an indication that the New Year used to be celebrated in March.

The Julian Calendar

The reference dates used for all concordances will be the Julian calendar which was introduced by Julius Caesar in 45 BC. To begin with an extra day was added every third year. The calendar was reformed in 9 BC when the beginning of the year was fixed as 1 January and the "leap year" fell every fourth year, when the year number was a multiple of four. The Julian calendar remained in use until AD 1582 when Pope Gregory XIII (AD 1572-85) reformed it to give the present-day Gregorian calendar.[68] As with the Jewish calendar, we are able to date events accurately according to the Julian calendar, though we are not always able to ascertain whether it was actually in use in any given region or community.

The Pre-Hiğra Calendar

There have been many serious studies carried out to try and elucidate exactly which calendar system was used in and around Makka and Madīna before the advent of Islam. Such studies usually attempt to define when the calendar began, as well as when any eventual changes were made to it, be they changes in the month names or the actual system of counting years. The most important question being when, if at all, the purely lunar calendar, used in Islam, was adopted. We will give a brief résumé of some of the more important theories. Throughout this section we need to be aware of the limitations of the term "pre-Hiğra" as this can cover three separate 'realities': a calendar whose month names were different to the ones presently in use, a calendar used during the ğāhilīya up to the Hiğra and the calendar used from the time of the Hiğra until the calendar reform said to have taken place during the *Farewell Pilgrimage*.

Al Bīrūnī[69] writes about the calendar as follows: "Their (pre-Hijra Arabs) months were distributed over the four seasons, beginning with autumn, which they called Rabīʿ; then winter [called Šitā'[70]];

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[68] Not all countries adopted the Gregorian calendar reforms at the same time, Great Britain, for example did so, by act of Parliament, in September 1752, at the same time adopting 1 January as the beginning of the year.

[69] Born in Kāṭ, the capital of Ḫawārizm, of an Iranian family in AD 973, Abū al Rīḥān Muḥammad b. Aḥmad al Bīrūnī became an authority on calendars, chronology and astronomy, writing about 180 works. He died some time after AD 1050, probably in Ġazna. See *E.I.*^{2}, *s.v.* al-Bīrūnī.

[70] Not in the text.

then spring, called Ṣayf, or by others Rabīʿ II; then summer, called Qayẓ. This nomenclature, however, has altogether been dropped and forgotten. Of the way in which they divided the seasons, we know only that the beginning of *Rabīʿ* or autumn fell on 3 Ilūl (September), the beginning of winter on 3 Kānūn I (December), the beginning of *Ṣayf* or spring on 5 Āḏār (March) and the beginning of *Qayẓ* or summer on 4 Ḥazīrān (June)."[71]

The author also provides month names and their etymology, reportedly used by ancestors in two slightly different lists:

Muḥarram	al Mu'tamir[72]	al
Mu'tamir Ṣafar	Nāğir[73]	Nāğira
Rabīʿ I	Ḫawwān[74]	
	Ḫawwān Rabīʿ II	
	Ṣuwān[75]	Ṣuwān
Ğumādā I	Ḥantam	
	Zabbā[76] Ğumādā II	
	Zabbā	Bā'id[77]
Rağab	al Aṣamm[78]	al
Aṣamm Šaʿbān	ʿĀdil[79]	
	Wāġil Ramaḍān	
	Nāfiq	
	Nāṭil[80] Šawwāl	
	Wāġil[81]	
	ʿĀdila	

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71 al-Bīrūnī, *The Chronology of Ancient Nations*, 322. These dates are close to those of the Solstices and Equinoxes, but not close enough to be of any significance.

72 "It '*obeys*' all the decrees of fortune, which the year is going to bring." al-Bīrūnī, *The Chronology of Ancient Nations*, 71.

73 "Is derived from *najr* which means 'intense heat'..." Ibid., 72.

74 "Is the form *faʿʿāl* of the verb '*to deceive*'..." Ibid.

75 "... is the form *fuʿāl* of the verb '*to preserve, to take care*'..." Ibid.

76 "... means a '*great and frequently occurring calamity.*' The month was called so, because in it there was much and frequent fighting." ibid. Effendi gives this month as Rabbā with the meaning of something to do with the "Equinox". Mahmoud Effendi, "Mémoire sur le calendrier arabe avant l'Islam et sur la naissance et l'âge du Prophète Mohammad," *Journal Asiatique* (1858): 146-156.

77 "... received its name from the fighting in it, for many people used to '*perish*' in it." al-Bīrūnī, *The Chronology of Ancient Nations*, 72.

78 "... was called so, because in it people abstained from fighting so that the clash of weapons was not heard." Ibid.

79 "... is derived from '*ʿadl* (which means either 'to be just' or 'to turn aside'). The month was called so, because it was one of the months of pilgrimage, when they used to abstain from the use of the Nāṭil, *i.e.* the wine-pot." Ibid.

80 "... means '*a measure, a pot of wine.*' The month was called so, because in it people indulged in debauches and frequently used that pot." Ibid.

81 "... means '*one who comes to a drinking-party without having been invited.*' This month was called so because it suddenly comes in after Ramaḍān, and because in Ramaḍān there was much wine-drinking, on account of the following months being the months of pilgrimage." Ibid.

Ḏū al Qa'da	Huwā'
	Ranna[82]
Ḏū al Ḥiğğa	Burak[83]
	Burak

He also notes that if the etymology of the two series of names is correct, then the interval between the names having been used must be great, as Ramaḍān, in the Hiğra calendar means the hottest month while, in the older calendar Nāğir, which corresponds to Ṣafar, was the hottest one.[84]

Talking of the intercalation system used by the Arabs during the time of the ğāhilīya al Bīrūnī describes it as follows: "This proceeding they called "Nasī'", i.e. the postponement, because in every second or third year they postponed the beginning of the year for a month, as it was required by the progression of the year...The first intercalation applied to Muḥarram; in consequence Ṣafar was called Muḥarram, Rabī' I was called Ṣafar and so on; ... The second intercalation applied to Ṣafar; in consequence the following month (Rabī' I) was called Ṣafar."[85]

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[82] "... was called so, because the sheep were '*crying*' on account of the drawing near of the time when they were to be killed." Ibid.

[83] "... was called so, because of the kneeling down of the camels on being led to the slaughter place." Ibid.

[84] The implications of this are complex! If the original luni-solar calendar enabled the months to remain synchronised with the seasons whose characteristics they reflected, then the calendar must have passed through a stage of being purely lunar in order for the difference between the months and the seasons to come about, or the system of intercalation was not adequate and a much more gradual slippage occurred between the months and the seasons. It is worth noting that the Gregorian reform of the Julian calendar, corrected an eleven-day discrepancy which had occurred over nearly 1,600 years. Another possibility which should not be ignored, is that, like the Jewish calendar, the pre-Hiğra calendar could have undergone a transformation which reflected a move away from religious influence to a more secular one.

[85] al Bīrūnī, *The Chronology of Ancient Nations*, 74.

This can be understood in two ways:

1. The intercalation was carried out every time after Ḏū al Ḥiğğa but considering the position of the additional month compared to the original series, the intercalated month would replace each month in turn, until it came back to replacing Muḥarram.

Muḥarram	Leap-month	Ḏū al Ḥiğğa
Ṣafar	Muḥarram	Leap-month
Rabī' I	Ṣafar	Muḥarram
Rabī' II	Rabī' I	Ṣafar
	...	... ...
Ḏū al Ḥiğğa	Ḏū al Qa'da	Šawwāl

2. The intercalation was carried out, in the first case, after Ḏū al Ḥiğğa, then in the second after Muḥarram and so on, without referring back to the original series of months.

Muḥarram	Leap-month	Ḏū al Ḥiğğa
Ṣafar	Muḥarram	Muḥarram
Rabī' I	Ṣafar	Leap-month
Rabī' II	Rabī' I	Ṣafar
...	...	...
Ḏū al Ḥiğğa	Ḏū al Qa'da	Šawwāl

Though the end result is the same the two possibilities need to be kept in mind.

"... This went on till the time when the Prophet fled from Makka to Madīna, when the turn of intercalation, as we have mentioned, had come to Shaʿbān. Now, this month was called Muḥarram, and Ramaḍān was called Ṣafar. Then the Prophet waited till the 'farewell pilgrimage,' on which occasion he addressed the people, and said: "The season, the time has gone round as it was on the day of God's creating the heavens and the earth." (Sūra 9:38) By which he meant that the months had returned to their original places, and that they had been freed from what the Arabs used to do with them. Therefore, the 'farewell pilgrimage', was also called 'the correct pilgrimage'."[86]

A. P. Caussin de Perceval[87] starts his study by quoting a tradition which claims that the Hiğra month names, as we know them now, were introduced some two hundred years before Islam, at the time of Kilāb b. Murra, one of Muḥammad's ancestors. The author then studies the different possible methods of intercalation: 1 month every three years, 7 months every 19 years (Jewish system) or 9 months every 24 years.[88] He then explores the meaning of *Nasī'*: The addition of a month, the name of that additional month, or the fact of transferring the sacred nature of Muḥarram to Ṣafar as a means of not having 3 months in a row when it is forbidden to carry out raids. Muḥammad supposedly put a stop to the practice, whatever it was, during the Farewell Pilgrimage.[89] The quotation. "Certainly time in its revolution has come back to what it was on the day heaven and earth were created" (Sūra 9:38), was interpreted by some to mean that a cycle of

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86 al Bīrūnī, *The Chronology of Ancient Nations,* 74. Though the author obviously believed the theory he has presented and even informs us that cycles of intercalation were used to date events (73), he gives neither his source, nor an example so that it is difficult to ignore the possibility that he, or his source, calculated back from the "Farewell Pilgrimage" in order to conclude that the cycle had come to Šaʿbān at the time of the Hiğra. See APPENDIX V: The Ğāhilīya and Hiğra Calendars.

87 Caussin de Perceval, "Mémoire sur le calendrier arabe avant l'islamisme," 347-348.

88 There was also another tradition which states that the Qurayš used to intercalate a month in every year, so that Ḏū al Ḥiğğa fell at the proper time only once in twelve years. Alfred Guillaume, "New Light on the Life of Muhammad," *Journal of Semitic Studies: Monograph No. 1.* n.d.: 22. In describing Manuscript 727 from the library of the Qarawīyūn mosque in Morocco, Guillaume says: "The title page of the beginning of the work has not survived, but Part II is entitled "Part II of the 'Book of the Campaigns' (*Maghāzī*). The report of Yūnus ibn Bukayr from Muḥammad ibn Isḥāq and others. The report of the shaykh Abū'l-Ḥusayn Aḥmad ibn Muḥammad ibn al-Naqūr al-Bazzāz from Abū Ṭāhir [Muḥammad ibn ʿAbdu'l-Raḥmān] al-Mukhliṣ from Riḍwān from Aḥmad ibn ʿAbdu'l-Jabbār al-ʿUtāridi from Yūnus." ..." 5.

89 Caussin de Perceval, "Mémoire sur le calendrier arabe avant l'islamisme," 348-350.

intercalation was complete and that Muḥarram was back in its rightful place (i.e. 12 months had been intercalated into the calendar).[90]

The author also looks at Maqrīzī's suggestion that there was a special form of intercalation in Madīna (One lunar month every 975 days, as opposed to 9 months in 24 years)[91] but rejects the idea, given that Madīnans went on the pilgrimage at the same time as the Makkans.[92]

Caussin de Perceval concludes that the Pilgrimage of Farewell fell around 9 March AD 632; whereas Ḍū al Ḥiğğa should fall in the autumn. AH 10 began on 9 April AD 631. If, according to Muḥammad Djarcaci, al Bīrūnī and al Maqrīzī, intercalation had been practised for 220 years by AH 10 (other texts say "about 2 centuries before Islam"), intercalation would have begun on 21 November AD 412 with the pilgrimage on 21 October AD 413. The year AH 1 would have begun on 19 April AD 622.[93]

The author quotes *History of the Wars*[94] in which Procopius tells of a meeting of Roman generals called at Daras in AD 541, by Belisarius, to discuss a plan of campaign, 2 officers from Syrian garrisons felt that participating in the campaign would leave the country open to attack from King Mundhir III. Belisarius explained that they were approaching the summer solstice[95] at which time the Arabs devoted about two months to the practice of their religion, and arms were not allowed.[96]

Caussin de Perceval cites two events from tradition to prove that his interpretation of the calendar fits historical facts:

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90 Ibid., 354.

91 In Bīrūnī's original text, this method of intercalation is attributed to the Indians, not the Madīnans.

92 Caussin de Perceval, "Mémoire sur le calendrier arabe avant l'islamisme," 356-359. The author's table of proposed dates has been reproduced in APPENDIX III : Caussin de Perceval's Pre-Hiğra Calendar, p. 118.

93 Ibid., 365-368, 371-373.

94 Procopius, *History of the Wars*, Vol. II, trans. H. B. Dewing. (Cambridge, Massachusetts: Harvard University Press, 1914), 401-403. See APPENDIX VII: Procopius, for the Greek text.

95 The summer solstice of AD 541 fell on 20 June at 10.56h.

96 Interesting as this text may be, it also raises questions! Was the mention of "two months" a mistake made by Belisarius or Procopius, or is it the indication that intercalation was being practised and would be used that year? One other possibility is that the author talks of two months and ignores the third. Are we even able to say what calendar King Mundhir was using? At this time, there is no way to answer these questions. On the other hand, the text gives the impression that the Arabs did the same thing every year at the same time, which is an argument for the fact that a luni-solar calendar was in use. According to the purely lunar calendar the summer solstice would have fallen in Ğumādā II, whereas in the luni-solar calendar, as we have calculated it, the summer solstice fell in Rabīʿ II.

1 AH when Muḥammad arrives in Madīna in Rabīʿ I, the heat was considerable.

5 AH the army which laid siege to Madīna in Šawwāl suffered a lot from the cold and the bad weather.[97]

Mahmoud Effendi[98] studies the pre-Islamic calendar in the second part of his study. All his calculations in this section are based upon the three dates he had deduced in the first section:

Muḥammad's birth	20 April 571 = Monday 9 Rabīʿ I
The Hiğra	20 September 622 = Monday 8 Rabīʿ I
Ibrāhīm's death	27 January 632 = Monday 29 Šawwāl[99]

A comparison of the dates of Muḥammad's birth and the Hiğra shows that the difference must always be a whole number of years minus one day, whether the calendar system was lunar or luni-solar. Using the Julian calendar, the difference between the two dates is 18,780 days and so the author concludes that the vague lunar calendar was in use.[100]

Effendi quotes from Manuscript no. 213 from the supplément des manuscrits arabes de la Bibliothèque impériale de Paris, second last page of the volume: called *Ğamʿa al ʿIdda* which says that a lunar eclipse occurred in Ğumādā II in the year AH 4, and concludes that it must have been the one of 20 November AD 625 corresponding with 14 Gumādā II AH 4.[101]

He also quotes Procopius on the incident from AD 541.[102] The author also uses the lunar eclipse, but I am less sure as to the veracity of the Hiğra month name. Between 28 January AD 632 and the summer solstice of AD 541, the number of days is 33104, or 1121 lunar months. The author concludes that the New Moon after the summer solstice of AD 541 was Rağab.[103]

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97 Caussin de Perceval, "Mémoire sur le calendrier arabe avant l'islamisme," 378.

98 Effendi, "Mémoire sur le calendrier arabe avant l'Islam," 146-156.

99 This is based on the date of a solar eclipse. The question of the date of Ibrāhīm's death will be studied in more detail when looking at information contained in the Ḥadīṯ literature.

100 Once again the author has entrapped himself within a closed system; if intercalation was being used, then there would be extra months added and the number of days, Julian or other, would vary. This sort of argument can only be valid if the dates used were fixed independently of this theory. If the dates were fixed, even by someone else who presumed that a vague lunar calendar was in use, then of course the results will prove that a vague lunar calendar was in use.

101 The question remains whether this text is another example of hindsight chronology or not.

102 See notes 94, 95 & 96 above.

103 According to the tables in APPENDIX V : The Ğāhilīya and Hiğra Calendars, the solstice would have fallen in Ğumādā II -84 AH in the lunar calendar or Rabīʿ II -81 AH in the luni-solar calendar.

The author's conclusion, that despite the correspondence of names to climatic factors, there was never a luni-solar calendar, seems weak.

Effendi also quotes from *al Ulūf* of Abū al Maʿšar, which presents the old calendar as having been one of intercalation of 1 month every two years, with the conclusion that the months would come back to their original position every 25 years. The text says that "in the year of the Higra, the calendar was in the 16th year of the cycle, beginning with Šaʿbān and ending with Rağab, during which month the pilgrimage took place."[104] The 23rd year of this cycle would begin with Ḏū al Ḥiğğa (AH 8) in which year Makka was captured. Muḥammad did not accomplish the pilgrimage as it fell in Ḏū al Qaʿda, but in the 25th year of the cycle (AH 10), when the pilgrimage was back in Ḏū al Ḥiğğa he went on the Farewell Pilgrimage and stopped the practice.

He also quotes *al Āṯār al Bāqiya* which states that intercalation started about 200 years before the Hiğra.

The author rejects both *al Ulūf* and *al Āṯār al Bāqiya*'s conclusions as he finds that their authors seem very hesitant and contradict themselves.[105]

Muhammad Hamidullah[106] quotes Qur'ān 18:25: "And they stayed in their cave three hundred years and added nine." This was interpreted as 300 solar years to which they would have to add nine lunar years. Using the averages for astronomical solar and lunar months, 300 solar years would be equal to 309.21 lunar years. Though there is no exact correspondence with one of the suggested methods of pre-Islamic intercalation, there is very close agreement with the system of adding 7 months over 19 years.[107]

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[104] Effendi, "Mémoire sur le calendrier arabe avant l'Islam," 168-178.

[105] According to calculations for the beginning of the month of Rabīʿ I: The Astronomical New Moon occurred on 10 April AD 571 at 09h.41 local time Makka, the first sighting would have been on the evening of 11 April, giving 1 Rabīʿ I as Sunday 12 April AD 571, therefore Muḥammad's birthday had to be Monday 9 Rabīʿ I, or 20 April AD 571. The calculations carried out according to Ilyas' parameters give the time of the New moon as 15h.26 local time with first visibility on the evening of 11 April AD 571.

[106] Muhammad Hamidullah, "Intercalation in the Qur'ān and the Hadīth," *Islamic Culture* (1943): 327-330.

[107] The other possibility, of course, is that this was just a "quaint" way of saying "three hundred and nine years", just as *One thousand and one nights* is known as *One thousand nights and one night* (alf layla wa layla) in Arabic. If this is not the correct interpretation and Hamidullah is correct, we are left with the problem of interpreting the message of the text...

Alavi Is'haqunnabi works on the basis of the contradictory and inexact dates given for many important and lesser events during the life of Muḥammad. After listing these events, the author concludes that: "the original calendar, according to which the events were dated, is lost; that perhaps there were two different types of chronologies working side by side in the Prophet's Medina, a fact which was not given due attention by the coming generations; and the only solution lies in discovering the lost truth."[108]

In the second chapter, the author recognises that Winckler was the first to put forward the idea and comments on an idea expressed by Hamidullah - no reference given - in which he speaks of two parallel chronologies which became one at the time of the Farewell Pilgrimage. In the opinion of the author, this was not the case.

The author then discusses different ways of adding months to the lunar cycle so that it will stay synchronised with the solar calendar concluding, on the basis of Qur'ānic exegesis,[109] that Makkans added a month as it was needed.

A short third chapter returns to "double documentation" on the grounds that most historical sources refer back to Ibn Isḥaq (d. AH150) and Waqidi (d. AH 207) and that the aforementioned authors, while sharing some common sources, and therefore giving common dates for some events, also have independent sources which reflect different calendars. The events and the sources are listed as follows:

Event[110]	Ibn Isḥāq	Wāqidī
Kuru b. Ǧābir Fahri	Ǧumādā II AH 2	Rabīʿ I AH 2
Banu Sulaym	Šawwāl AH 2	Muḥarram AH 3
Ḏū ʿAmr	Muḥarram AH 3	Rabīʿ I AH 3
Sarya Zayd b. Ḥāriṯa	Rabīʿ I AH 3	Ǧumādā II AH 3
Uḥud	Šawwāl AH 3	Muḥarram AH 4
Raji Accident	Šawwāl/Ḏū al Qaʿda AH 3[111]	Ṣafar AH 4
Badr Mawʿid	Šaʿbān AH 4	Ḏū al Qaʿda AH 4
Ḏāt al Riqāʿ	Ǧumādā I AH 4	Muḥarram AH 5
Ḫaybar	Muḥarram AH 7	Ǧumādā I AH 7

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[108] Alavi Is'haqunnabi, *The Arab Calendar prevalent during the Life-time of Muhammad* (Delhi: Rampur Institute of Oriental Studies, 1968), 10.

[109] *Al Tafsīr al Kabīr*, (Qur'ān 9:36) quoted in Bīrūnī, *The Chronology of Ancient Nations*, 13. "... adding it to the year as one month as soon as it completed the number of days of a month."

[110] See the glossary for more details of these events.

[111] In fact Ibn Isḥāq dates this event Ṣafar AH 3, see Alfred Guillaume, *The life of Muhammad: A translation of Ibn Ishaq's Sirat Rasul Allah* (Karachi: Oxford University Press, 1955), 426-433.

concluding that the sources were:

Event	Ibn Isḥāq	Wāqidī
Kuru b. Ǧābir Fahri	Madīnan	Makkan
Banu Sulaym	Makkan	Madīnan
Ḏū ʿAmr	Makkan	Madīnan
Sarya Zayd b. Ḥāriṯa	Makkan	Madīnan
Uḥud	Makkan	Madīnan
Raji Accident	Makkan	Madīnan
Badr Mawʿid	Makkan	Madīnan
Ḏāt al Riqāʿ	Madīnan	Makkan
Ḫaybar	Makkan	Madīnan[112]

Chapter four attempts to reconstruct the two calendars. Starting from the premise that the Makkan calendar was luni-solar and the Madīnan lunar.

The beginning of the Makkan year fell when the Sun was in, or about to enter, Libra and the full moon was seen in Aries, around the date of the Autumn Equinox, while the beginning of the year in the Madīnan calendar was not fixed.[113]

Year	Makkan	Madīnan
AH 1	Monday 13/09/622	Friday 16/07/622
AH 2	Sunday 02/10/623	Tuesday 05/07/623
AH 3	Friday 21/09/624	Sunday 24/06/624
AH 4	Tuesday 10/09/625	Thursday 13/06/625
AH 5	Sunday 28/09/626	Monday 02/06/626
AH 6	Friday 18/09/627	Saturday 23/05/627
AH 7	Thursday 06/10/628	Wednesday 11/05/628
AH 8	Tuesday 26/09/629	Monday 01/05/629
AH 9	Saturday 15/09/630	Friday 20/04/630

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[112] Reordering the table to put the "Makkan" and "Madīnan" texts together, we obtain the following:

Event	Makkan	Madīnan	Difference
Kuru b. Ǧābir Fahri	Rabīʿ I AH 2	Ǧumādā II AH 2	4 months
Banu Sulaym	Šawwāl AH 2	Muḥarram AH 3	4 months
Ḏū ʿAmr	Muḥarram AH 3	Rabīʿ I AH 3	3 months
Sarya Zayd b. Ḥāriṯa	Rabīʿ I AH 3	Ǧumādā II AH 3	4 months
Uhud	Šawwāl AH 3	Muḥarram AH 4	4 months
Raji Accident	Šawwāl/Ḏū al Qaʿda AH 3	Ṣafar AH 4	5/4 months
Badr Mawʿid	Šaʿbān AH 4	Ḏū al Qaʿda AH 4	4 months
Ḏāt al Riqā	Muḥarram AH 5	Ǧumādā I AH 4	5 months
Ḫaybar	Muḥarram AH 7	Ǧumādā I AH 7	5 months

[113] The weakness of this argument lies in the fact that the author has not considered the possibility of hindsight chronology! An equally valid argument, based upon the given facts, is that the original sources which provided the dates, calculated them firm in the belief that one or the other calendar system existed. The overall consideration of the results as shown in the table above, would be that between AH 2 and AH 5, one month was added in the intercalary system, but there is no independent proof that this was actually the case.

Chapter five studies individual dates in more detail and attributes a Julian date to them.

The main interest of this work lies more in the "unravelling" of mixed ideas about dating.

Evidence for the existence of two different calendars is much less convincing.

F. A. Shamsi has written a number of articles concerning the Hiğra and pre-Hiğra calendars.[114]

The two which interest us the most here are "The Year in the Qur'ān" and "The Meaning of Nasi'".

In the first, the author studies the different Arabic words used to describe the year in an effort to discern whether any of them were used to describe a particular calendar. He concluded that there was no clear evidence that any of the terms was used to describe a particular calendar.

The second article is a study of the possible meanings of Qur'ān 9:37.[115] The author discusses four possible interpretations:

- that Nasi' means the "postponement of the ... sacredness of a month"
- that it "means a month shorn of its sacredness"
- that it "means the intercalated month"
- or "a certain number of days equivalent to the progression of a calendar year".

The first two hypotheses are rapidly discarded for different reasons. The third, within a limited context is much more tenable, however it is discarded because Nasi' would then seem to have been sacred sometimes and not sacred at others for no apparent reason.

This leaves the fourth interpretation that Nasi' meant the difference between the lunar and solar calendars as well as the days added at the end of some years in order to bring the two calendars back into synchronicity. The rest of the article elaborates on this theme.

Hāshim Amīr ʿAlī[116] starts from the premise that the origin of many of the problems faced by the student of early Islamic chronology lies in the two prevailing theories about the calendar which

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[114] F. A. Shamsi, "Three Proposed Arabian Calendars with Special Reference to the Date of the Hijrah," *Islamic Studies* 23, (1983): 189-224, 239-323.
F. A. Shamsi, "The Date of Hijrah," *Islamic Studies* 23 (1984): 189-323.
F. A. Shamsi, "The Meaning of Nasi'," *Islamic Studies* 26 (1987): 143-164.
F. A. Shamsi, "The Year in the Qur'ān," *Islamic Studies* 25 (1986): 305-324.
F. A. Shamsi, "Mahmūd Pāshā on the date of Holy Prophet's Birth," *Hamdard Islamicus* 12 (1989): 3-24.

[115] "The month postponed is an increase of unbelief whereby the unbelievers go astray; one year they make it profane, and hallow it another, to agree with the number of months that God has hallowed, and so profane what God has hallowed."

[116] Hāshim Amīr ʿAlī, "The First Decade in Islam: A Fresh Approach to the Calendrical Study of Early Islam," *The Muslim World* 44, (1954): 126-138.

was in use before the coming of Islam and during the ten years which followed Muḥammad's arrival in Madīna.

The author then goes on to study, and refute Caussin de Perceval's arguments for adopting the theory of regular triennial intercalation, in favour of the more complicated Jewish system. He also makes a very pertinent observation when he highlights the number of calendars where there has been a shift between the spring and autumn equinoxes for the beginning of the year. In fact the Jewish calendar integrates both with the religious year beginning in the month of Nisan, in the spring, while the civil year begins in autumn with the month of Tishri. Amīr ʿAlī believes that a change in calendar policy from spring to autumn, some time in the past, better explains the fact that the month names no longer correspond to the seasons their etymology would seem to suggest, rather than trying to explain this by a gradual displacement of the months because of faulty intercalation.

A comparison of the Jewish and the prevailing Arab calendar for AH 10, according to the author shows clearly how close the two were, and he posits that the *Nāsi'* month of the Arab calendar must have corresponded very closely to the *veAdhār* month of the Jews. He also remarks on the similarity between *Nāsi'* and *Nisan.*

Conclusion

The different theories presented in the studies which we have looked at so briefly here contain some very interesting information and theories. Nevertheless, the theories all leave unanswered questions, or seem to ignore information which does not appear to fit the theory. None of the authors consider the problem of hindsight chronology, and none are able to present any independent evidence to corroborate at least one chronological point. The major weakness of all these theories is that they are attempting to prove a point, leaving the reader to wonder if all facts, even those which contradict the theory, have been presented for his/her consideration.

The Hiğra Calendar

The calendar takes its name from Muḥammad's flight (*Hiğra*) from Makka to Madīna, where he arrived on Monday 8 Rabīʿ I.[117] However, in order not to complicate matters, the year of the Hiğra

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[117] al Bīrūnī. *The Chronology of Ancient Nations*, 34.

calendar is calculated to begin on the first day of the month of Muḥarram which preceded Muḥammad's flight. The date for the beginning of the Hiğra is generally given as AD 622, 15/16 July. The Hiğra calendar was introduced by the Caliph ʿUmar ibn al Ḫaṭṭāb (AD 634-44) in about AD 639, some seventeen years after the event and seven years after Muḥammad's death.[118] The problem that we face, when investigating the period preceding the fixing of the Hiğra calendar, is in deciding exactly what sort of calendar was in use. We have evidence which suggests that in the early community, the Hiğra era was used to date events,[119] but not enough details to work out exactly how they counted. Similarly, we do not have many details about how ʿUmar calculated back to the Hiğra: did he allow for intercalary years or simply ignore them? The Hiğra calendar is now a purely lunar calendar, its months being defined by the time between one sighting of the new crescent and the next.

Tradition has it that during the Farewell Pilgrimage, Muḥammad altered the calendar from being a luni-solar one to bring it back to being a purely lunar one. In so doing, he abolished the practice of intercalation (*nasī'*).

Al Bīrūnī gives the names by which the first ten years of the Hiğra were commonly known which could have been of potential interest, but proves to teach us nothing new about the chronology of Muḥammad's life:

> "At the time of the Prophet, people had given to each of the years between the Flight and his death a special name derived from some event, which had happened to him in that identical year. "
>
> "The 1st year after the Flight is the year of the permission.
> The 2nd year after the Flight is the year of the order for fighting.
> The 3rd year after the Flight is the year of the trial.
> The 4th year after the Flight is the year of the congratulations on the occasion of marriage.
> The 5th year after the Flight is the year of the earthquake.
> The 6th year after the Flight is the year of inquiring.
> The 7th year after the Flight is the year of gaining victory.
> The 8th year after the Flight is the year of equality.
> The 9th year after the Flight is the year of exemption.[120]

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[118] Ṭabarī tells us that Muḥammad himself defined the Hiğra calendar when he ordered that letters and documents be dated from that time. Ṭabarī, *Mohammed, sceau des prophètes*, 115-119.

[119] We will study events below which are dated by counting the number of months between them and Muḥammad's arrival in Madīna.

[120] Also known as the year of the delegations. Guillaume, *The Life of Muhammad*, 627.

The 10th year after the Flight is the year of farewell."

"By these names it was rendered superfluous to denote the years by the numbers, the 1st, the 2nd, etc., after the flight. "[121]

What is not too clear, is whether these years were counted from the Hiğra or from Muḥarram, or whether they are an indication of a "primitive" Hiğra calendar based upon the date of Muḥammad's arrival in Madīna.

Mahmoud Effendi[122] discusses the dating of Ibrāhīm's death, quoting al Buḫārī's *Saḥiḥ*[123] which dates the death in Rabīʿ I or Ramaḍān of AH 10 and *al Sīra al Ḥalabiyya*[124] which says that he died in AH 10 at the age of 1 year, 10 months and 6 days,[125] and both agree that there was a solar eclipse that day. Both also agree that he was born in Ḏū al Ḥiğğa AH 8. The date of the eclipse is given as 27 January AD 632. The author says that this concords with 29 Šawwāl in AH 10 and this is his first fixed chronological point.

Next, al Masʿūdī is quoted: "Muḥammad was born 50 days after the arrival of the Ethiopians at Makka, to which they had laid siege on Monday (with) 13 (nights) left in Muḥarram, 882 Seleucid, or 17 Muḥarram in the year 216 after the betrayal,[126] and during the 40th year of the reign of Kasra Anoucherwan." The author rejects Abū al Fidā's chronology which places the birth in year 881 of the Seleucid era and year 1316 of the Nabonassar era as well as in the 42nd year of Kasra Anoucherwan's reign, which would place it between AD 569 - 570. As there is contradiction between the Seleucid and Nabonassar dates, the author rejects them both.[127]

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[121] Ibid., 35. In a chapter called "Epochs of the Ancient Arabs", al Bīrūnī lists different events which were used for dating by different tribes, and the reasoning behind the custom. Ibid., 34-35, 39-40.

[122] Effendi, "Mémoire sur le calendrier arabe avant l'Islam," 109-192, Part 1, 112-116.

[123] Abū ʿAbd Allāh al Buḫārī, "Times of Prayer," *Saḥiḥ*. (Leiden: E. J. Brill, 1862-1908).

[124] al Ḥalabī Nūr al Dīn ʿAlī, *al Sīra al Ḥalabīya*, (Bayrūt, 1980).

[125] Other sources say 18 months. Effendi, "Mémoire sur le calendrier arabe avant l'Islam," 109-192, Part 1, 113-114.

[126] The betrayal (*al* ġadr) refers to an episode lost in the mists of time, but quoted as having been a chronological reference point.

[127] Here too, we are obliged to remember that none of the historical material is of any value if the date of Muḥammad's birth is incorrect in the first place.

H. Lammens[128] points out that though revelation states that "the number of months is twelve",[129] which was a rejection of the system of intercalated months, nowhere is it said that the twelve months constitute a year![130] This is not simply hair-splitting on the part of Lammens, but serves to underline the fact that the years were not counted as assiduously as months and days.[131] This point is strongly supported by looking at how often the Qur'ān talks of the Sun and the Moon as being signs sent by God to mark the passage of time, how day and night are presented time and again as the fundamental measures of time.[132] Another indication of the relative unimportance of years as a chronological measure, at least in the early community, may well be found in older versions of the Sīra where, up until about the year AH 6, events are dated in terms of months after the Hiğra, while earlier events are situated much more vaguely, placing them before or after the Prophet's vocation, or after the emigration to Abyssinia.[133] We will have to come back to this point when considering whether events from that period can be accurately dated or if they can teach us anything about the calendar.

Hāšim Amīr ʿAlī starts his calculation of concordance for the calendar of the first ten years of Islam, from the one date which, according to him, no one questions, the date of the Farewell Pilgrimage. The month of Ḏū al Ḥiğğa AH 10, began on Friday 28 February AD 632, so that the feast which falls on 10 Ḏū al Ḥiğğa would fall on 10 March. The Jewish month was not Adhār, but veAdhār.[134] Hāšim Amīr ʿAlī argues that no matter what system of intercalation was used, the month of Ḏū al Ḥiğğa AH 10 would have been followed by the Nāsi' month and that there could have been some speculation that it would have been omitted in order to bring the Jewish and Arab

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[128] Henri Lammens, "L'Age de Mahomet et la chronologie de la Sīra," *Journal Asiatique* 17 (Avril 1911): 209-250. It has to be noted that, though Lammens was erudite, the impression one obtains of Islam through reading his works is not a very positive one. This is a regrettable trait as the author's style of writing and presentation can well blind the reader to valid observations.

[129] Qur'ān 9:37

[130] Lammens, "L'Age de Mahomet," 223.

[131] It goes almost without saying that the year did have its own importance for yearly events such as the pilgrimage, the departure and arrival of different caravans etc. The point that is being made is that counting the years seems to have been less common than counting the months. The word commonly used for "year" in modern Arabic *sana*, meant "a time of shortage or hardship" in the sixth and seventh centuries. This is found in the Qur'ān in the plural *sinīn* as in: "We struck the Pharaoh's people with years of famine and lack of fruits, perhaps it would make them think about their ways." 7:130.

[132] *Qur'ān* 6:96, 10:5, 14:33, 17:12, 36:37-40, 39:5, 41:37, 45:3-5, 55:5, 57:6.

[133] See Ibn Saʿd, *Ṭabaqāt*, II[1], 21, 24, 25, 43, 56, and Lammens, "L'Age de Mahomet," 241.

calendars back together.[135] The author can speculate as to why there is a difference of one month between the two calendars, but is unable to provide an explanation. Following his presentation of the theory that the Arabs followed the Jewish system of intercalation, the author provides a table of concordance between the Julian, Jewish, Perceval's and his version of the Arab calendars for the first eleven years of the Hiğra.[136]

The next logical step, according to the author, was that when the Hiğra calendar was actually defined, the fact that Muḥammad had rejected intercalation was a deciding factor in working out the first ten years. This was done calculating a purely lunar calendar.

The author then compares different sources which mention the date of Muḥammad's arrival in Madīna and concludes that according to the calculated Hiğra calendar, this fell on Monday 8 Rabīʿ I, but that in the Arab's luni-solar calendar it was Monday 8 Ğumādā II, which corresponded to 10 Tishri in the Jewish calendar, which fell on Monday 20 September.

Conclusion

Once again, we have been presented with interesting and persuasive arguments. It is easy to imagine the confusion which must have reigned in the early years following Muḥammad's death - the same confusion remains to this day - when dating an event by counting the number of months it happened after the Hiğra, are the sources calculating from a month name or did their original sources contain a number and no name? Either hypothesis leaves the same quandary about whether information has been lost or destroyed - even unintentionally - by authors who reworked the source material to add more information: calculating a month name from a number or vice versa.

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[134] Adar was the twelfth month in the Jewish religious calendar and sixth month in the civil one which meant that Veadar came at the end of the religious year, but in the middle of the civil one.

[135] See below, p. 26, for a discussion about some of the assumptions made concerning the nasīʾ.

[136] The tables are reproduced in APPENDIX IV : Hāshim Amīr ʿAlī Table of Concordance, 119. According to the author, AH 10 falls during the year 4391 of the Jewish calendar, during the second year of the nineteen-year cycle and the beginning of the Hiğra era is dated 17 April AD 622.

The Muḥammadī Calendar[137]

A more recent approach to the question of early Islamic chronology, the Muḥammadī Calendar is based on the premise that, not only does the Hiğra calendar not permit easy dating of pre-Hiğra events, but also that events relating to the life of Muḥammad are dated according to three different eras: Muḥammad's birth, the first revelation of the Qur'ān and the Hiğra, making chronological work over-complicated. For these reasons, a calendar starting in the month of Muḥammad's birth is suggested, and in order to avoid any confusion, new month names are devised, based upon important events which happened during them. This gives the following concordance of months:

al Nūr[138]		Rabī‘ I
al Quds[139]		Rabī‘
II		
al Karrār[140]		
	Ğumādā I	
al Zahrā'[141]		
	Ğumādā II	
al Isrā'[142]		Rağab
al Qādisiyya[143]		Ša‘bān
Ramaḍān		
	Ramaḍān	
al Naṣr[144]		
	Šawwāl	
al Bay‘a[145]		Ḏū al
Qa‘da		
al Ḥağğ[146]		Ḏū al
Ḥiğğa		

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[137] The two sources used here are: Shaykh Muḥammad al Casnazānī al-Husseinī and others, "An Investigation of the Gregorian Chronology of Early Islamic History: A Pilot Study" *Al Masāq* 7 (1994): 227-266, and Muhammad al Dargazelli and Louay J. Fatoohi, "Finding the Julian dates of Islamic events before Hijra using computer" *The Journal of the Institute of the Middle East Studies* 11 (1992): 1-23.

[138] So called because the Qur'ān, 5:15 gives this name to the month in which Muḥammad was born. Al Casnazānī al-Husseinī, "An Investigation of the Gregorian Chronology of Early Islamic History", 234.

[139] Jerusalem (*al Quds* in Arabic) because it was conquered in this month during the caliphate of ‘Umar ibn al Ḫaṭṭāb in AD 637. Ibid.

[140] Meaning "the attacker", this title was given to ‘Alī b. Abī Ṭālib because of the leading role he played in the battle of Ḫaybar in AD 628. Ibid., 234.

[141] Meaning "the ever flowering", a title given to Fāṭima b. Muḥammad who was born during this month in AD 606. Ibid.

[142] Name for the night journey which Muḥammad made from Makka to Jerusalem and then to heaven in AD 620. Ibid.

[143] Month in which the Muslims achieved victory during the caliphate of ‘Umar ibn al Ḫaṭṭāb in AD 637. Ibid.

[144] Month which commemorates the victory of al Ḫadaq in AD 627. Ibid.

[145] al Bay‘a or "the pledge" of al Raḍwān which took place during this month in AD 628. Ibid.

[146] Month of the Pilgrimage. Ibid.

al Hiğra[147]

Muḥarram

al Futūḥ[148] Ṣafar

As Muḥammad was born fifty three years and ten months before the Hiğra, the Muḥammadī calendar dates are obtained by adding 53 years and 10 months to the Hiğra date.

One of the arguments central to the creation of this calendar system, is that *al nasī'* simply meant the removal of the ban on fighting during one of the months during which it was usually taboo, namely Muḥarram, Rağab, Ḏū al Qa'da and Ḏū al Ḥiğğa, without intercallation. At the same time the authors refute the idea that the Arabs ever had a luni-solar calendar which corresponded roughly with the seasons and in which the month-names had some sort of seasonal significance. Rather the Arabs switched between solar and lunar calendars often and that any names with seasonal overtones are the relics of some earlier solar calendar. The calendar, as described above, is then used to provide a chronology of the life of Muḥammad dated in both the Hiğra and Muḥammadī calendars.

In so far as it goes, this calendar shows distinct advantages over the Hiğra calendar for anyone interested in the chronology of the early life of Muḥammad and the beginnings of Islam. However, very little importance seems to be given to fixing the key point of the calendar, namely its beginning. For a calendar which is supposed to provide us with accurate concordances of dates for the important events of Islam, the starting point is of vital importance. There does seem to be enough evidence to at least require the authors to investigate, in much more detail, the different schools of thought with regards Muḥammad's date of birth. Any doubt about the accuracy of the starting point of the calendar, naturally raises questions about other dates and the critical methods used to discern which dates should be accepted or rejected.

Calendar Calculation/Prediction

Ever since peoples started using the Moon as a means of calculating and marking time, they have been faced with the problem of trying to predict its movement through the sky, its different phases and, above all, when the new crescent[149] would appear.

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[147] First month of the Hiğra calendar. Ibid.

[148] "The conquests, in memory of several Islamic conquests which took place during this month. Ibid.

[149] Throughout this work, the author will use "new crescent" to denote the first sighting of the lunar crescent after the astronomical "new moon". The sighting of the new crescent is used in many calendars to mark the beginning of the month.

Different rules for the prediction of crescent visibility have been worked out by astronomers, from the times of Ancient Babylon until the present day, not least among them being the Muslims.[150] But these efforts were handicapped by the difficulty of calculating the Moon's orbit and its position relative to the Sun and the Earth.[151]

Even when modern studies produced more reliable formulae for calculating planetary positions, they were so complex that their use was rather limited until computers become powerful enough, and more readily available, to handle the iterative process of calculating them within reasonable time-limits.

One other factor which needs to be considered when calculating astronomical events which occurred centuries ago is the slowing of the Earth's rotation which causes a discrepancy between the calculated and historical values. Much of this work is carried out by comparing calculations of astronomical events such as eclipses with historical records. A recent study has shown that the accepted values for the changes in the rate of the Earth's rotation (ΔT) have to be modified.[152] For the period of Muḥammad's life (c. AD 571 - 623) this will give a difference of about one hour in the calculated time of the New Moon.

It is not sufficient to know the positions of the Sun and the Moon relative to the Earth. The new crescent has to be observed and this implies taking into consideration other factors which could

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[150] For more details see Frans Bruin, "The First Visibility of the Lunar Crescent," *Vistas in Astronomy* 21 (1977): 331-8 and Mohammad Ilyas, *A Modern Guide to Astronomical Calculations of Islamic Calendar Times and Qibla* (Kuala Lumpur: Berita Publishing, 1984), 3-140. Even more detailed studies of more specific theories can be found such as Edward S. Kennedy, "The Lunar Visibility Theory of Ya'qub Ibn Tariq," *Journal of Near Eastern Studies* 27 (1968): 126-132 and Régis Morelon, *Thābit Ibn Qurra: Oeuvres d'astronomie* (Paris: Les Belles Lettres, 1987), which also recalculate data by computer or compare older parameters with more modern ones. This is not within the scope of the present study.

[151] It is interesting to note that, for the ordinary person, crescent visibility prediction, from month to month is simple: they simply need to look for the new crescent in the evening, 29 days after the sighting of the previous one, and if it is not visible, look for it again on the following evening. All of this, of course weather permitting. If we need to estimate when a new crescent will be visible some months or years ahead, using the average of 29.5 days per lunar month will give a good approximation. The problem lies in predicting, with any accuracy over long periods, exactly when the crescent will be visible. In the short-term, the lunar months do not necessarily alternate between 29 and 30 days regularly. Maurice A. McPartlan, "Astronomical Calculation of New Crescent Visibility 579H. - 583H.: A Five-Year Test of Dr. Mohammad Ilyas' Parameters" (Licentiate dissertation, Pontificio Istituto di Studi Arabi e d'Islamistica, Rome, 1991), 135, showed that there are rarely more than two months of 29 days in succession, whereas three or four months of 30 days can and do follow each other.

[152] F. Richard Stephenson, and L.V. Morrison, "Long-term fluctuations in the Earth's rotation: 700 BC to AD 1990," *Phil. Trans. Roy. Soc.* 351 (1995): 165-202. Allowance for changes in the rate of the Earth's rotation ($\Delta T = 31t^2$ where 't' is measured in centuries from the epoch AD 1820) will have a value of circa 4000 ± 300 seconds for the period under consideration. This difference of roughly one hour as compared

affect visibility.[153] This aspect of crescent visibility calculation remains much more controversial[154] than the purely positional side of calculations.[155]

Much of the work on this subject from the late nineteenth and early twentieth centuries was based upon efforts to date the crucifixion,[156] while more recent work has largely been inspired by the Hiğra calendar and efforts to define and implement an International Hiğra Calendar which respects both religious precepts and scientific data.

One of the most prolific writers in this field is Professor Mohammad Ilyas.[157] In a thesis based upon Ilyas' parameters,[158] McPartlan demonstrated that the computerised prediction of new crescent visibility is more reliable than the use of tables of concordance.[159]

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with uncorrected calculations is obviously more critical when considering eclipses low down on the horizon.

153 These can be the sensitivity of the eye, relative luminosity of the crescent and the sky, crescent size, the weather - no matter what form of computation is used, the crescent can only be observed if the weather permits - and refraction, which in turn depends upon atmospheric pressure and temperature, the altitude of the observer, the observed object and any obstacles which may lie between the two. It is immediately evident that the weather factor cannot easily be included in such calculations, especially if they pertain to events far removed in time.

154 See Bruin, "The First Visibility of the Lunar Crescent," 331-8, Muammer Dizer, *A Calculation Method for the Visibility Curve of the New Moon* (Bosphorus University, Kandilli Observatory, n.d.), Ilyas, *A Modern Guide*, 82-111 and Bradley E. Schaefer, "Visibility of the Lunar Crescent," *Q. Jl. R. astr. Soc.* 29 (1988): 511-523.

155 It could be argued that the average length of the lunar month is very close to 29.5 days, which means that months will always be either 29 or 30 days long and that is correct. What is less simple to predict, is the sequence of months of 29 or 30 days. In standardised calendars, the months alternate between 29 and 30, but more modern astronomical predictions of crescent visibility have shown that months of 29 days can follow each other, as can months of 30, even though, over a longer period the length of the months will average 29.5 days. If we are looking for accurate dating of events these variations are important.

156 See G. Amadon, "Ancient Jewish Calendation," *Journal of Biblical Literature* 61 (1941): 227-280, J. K. Fotheringham, "The Date of the Crucifixion," Journal of Philology 29 (1903): 100-108, idem, "The Evidence of Astronomy and Technical Chronology for the Date of the Crucifixion," *Journal of Theological Studies* (1973): 146-162.

157 Professor Mohammad Ilyas, Ph.D. (Adelaide), M.Sc.(Aligarth), Fellow of the Royal Meteorological Society and Fellow of the Royal Astronomical Society, is lecturer in the School of Physics at the Universiti Sains, Malaysia and one of the leading figures in the International Islamic Calendar Programme. His English publications are listed in the bibliography.
Most of his earlier results and conclusions were summed up in *A Modern Guide to Astronomical Calculations of Islamic Calendar, Times and Qibla*, though some of his parameters were subsequently modified, details being given in "Limiting altitude separation in the new Moon's first visibility criterion," *Astronomy and Astrophysics* 206 (1988): 133-135 and *Internationalisation of the Islamic Calendar* (Penang: Universiti Sains, 1988).

158 McPartlan, "Astronomical Calculation of New Crescent Visibility." Passim.

159 See H. H. Cattenoz, *Tables de concordance des ères chrétienne et hégirienne* (Rabat: Editions Techniques Nord-Africaines, 1961) and G. S. P. Freeman-Grenville, *The Muslim and Christian Calendars* (London: Oxford University Press, 1963). Though Freeman-Grenville is usually referred to in the English-speaking milieu, Cattenoz has more complete tables which are easier to use.

In order to start a series of calculations an approximate date of the astronomical new moon is taken from a table of concordance such as that of Cattenoz. The Julian day number is then calculated for 0h. Terrestrial Time (TT) on this date and the apparent geocentric longitudes of the sun and the moon are calculated for this moment.[160]

Using an iterative process, the program compares the lunar and solar longitudes on the selected date and TT, then adjusts the time to approximate the conjunction; then it recalculates the longitudes until an acceptable degree of proximity is obtained.[161] The computer then calculates the time of sunset for the given geographical location using another iterative process.[162] The moon's topocentric co-ordinates[163] are calculated for the time of sunset and from them the moon's angular and altitude separation from the sun can be obtained. These two values are then compared to Ilyas' values. If visibility is predicted, the programme prints the results, otherwise it calculates visibility for the following day.

In the original project, the program calculated visibility over an area which covered Spain, North Africa and the Arab Peninsula (10°N-45°N, 10°W-60°E) and plotted the curve of limiting visibility on a map. The results were compared with historical data. This study remains unique in that it compares historical data with theoretical predictions of crescent visibility. The results, over the five years of the test compared to the tables of Cattenoz give 54% of the dates correct and 12% incorrect in both systems. In 26% of the cases, the calculations proved correct though Cattenoz was in error, while in 8% of the results the opposite was true. A total of 80% correct dates were obtained by calculations as opposed to 62% for the tables, which is a significant improvement.

The study had three main conclusions: Astronomical calculations using Ilyas' parameters give significantly better calendar predictions than tables such as Cattenoz; the vertical separation factor

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[160] The formulae for the calculation of the solar and lunar co-ordinates were taken from Emerson B., *Approximate lunar coordinates*, NAO Technical Note 48 (H.M. Nautical Almanac Office, 1979) and Emerson B., *Approximate solar coordinates*, NAO Technical Note 47 (H.M. Nautical Almanac Office, 1978).

[161] An angular tolerance of ± 0.0085° which corresponds to an accuracy of ≈ 0.5 minute.

[162] Refraction was calculated using the formula given in *NORTON's 2000.0 Star atlas and reference handbook*. Eighteenth ed. Ridpath, Ian, Editor. (Essex: Longman Scientific & Technical, 1989) p. 44. The values for atmospheric pressure and temperature being taken as constants (1013.25 millibars and 10° C).

[163] The moon is, relatively speaking, so close that the difference between the topocentric and geocentric co-ordinates can be as much as 1°.

in Ilyas' parameters may well be too conservative by approximately 0.5°;[164] months calculated to have 29 days rarely follow more than two in succession whereas months of 30 days often occur in series of two, three and even four months in a row.[165] The calculations of concordance used in this study are based upon the programme elaborated in the thesis.

When all factors are taken into account, a fundamental difference remains between positional and observational astronomy: though we may regret the absence of records detailing observation of certain events, and so turn to astronomical calculations to define, with an accuracy which sometimes belies belief, where or when certain events took place, no amount of calculations can guarantee that the event, the parameters of which have been calculated so painstakingly, was actually observed! The reasons for this can be different, either the event was simply not noticed - a good example are partial solar eclipses which most people are not aware of - or climatic conditions would not allow the observation.

Conclusion

In an effort to contribute to the discussion, I have calculated lunar crescent visibility from AD 500 April 16 to AD 633 February 18.[166] The results are presented in APPENDIX V : The Ğāhilīya and Hiğra Calendars. Given that there are different theories about the ğāhilīya calendar, one of them being that it followed the Jewish system of intercalation, the table presents both a lunar and a luni-solar version of the calendar. Working back from AH 10 which, according to some writers, was preceded by the last intercalary month, and placing the extra months following the system used in the Jewish calendar, it is possible to "reconstruct" this, or any other calendar system in order to test its validity. The value of this exercise with regards the present study, is not simply one of verifying data,[167] it can also help us to explore all the implications of a given system.

Looking further into the possible permutations of concordance between lunar and luni-solar calendars, the table in Appendix IV offers two further possibilities: that the months of Muḥarram

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[164] McPartlan, Maurice A. "Astronomical Calculation of New Crescent Visibility 579-583 AH." *Quarterly Journal of the Royal Astronomical Society* 37 (1996): 837.

[165] Ibid., 840.

[166] The beginning date to cover the event mentioned in Procopius, *History of the Wars*, see above, note 94, 14, and ending with the year of Muḥammad's death.

[167] For example, see note 96 above.

came together during the nineteen year cycle, rather than at the end of it,[168] or that the year AH 10 was not the first year during which the two calendars agreed.[169] Though neither of the above possibilities changes the concordance of dates for AH 10 / AD 631, it does offer some latitude in fixing which years between AH 1-10 were intercalary years. Supposing that the luni-solar calendar carried on, an extract of the table in Appendix IV would have years AH10, 11 and 12 together. Taking the opposite extreme, but with the calendar change happening in the third year of the cycle we come up with the variant shown in Table 1 below. Equally, AH 10 could have fallen on the second of the three years during which the two calendars were in conjunction. Similar reasoning can also be applied to the question of which year of the (nineteen-year) cycle saw the two calendars come together, as this in turn dictates the sequence of intercalary years which follow each other in an irregular sequence, sometimes after two years and sometimes after one. Taking the two variables together gives a large number of possible combinations without even considering other luni-solar calendar models.

CONCORDANCE			VARIANT		
Cycle	Luni-Solar	Lunar	Cycle	Luni-solar	Luni-solar
	Nāsī	1 Ramaḍān 01		-1 Rabīʿ II 01	-1 Muḥarram 01
12	2 Muḥarram 01	1 Šawwāl 01	13	1 Muḥarram 01	-1 Šawwāl 01
	2 Rabīʿ II 01	2 Muḥarram 01		1 Rabīʿ II 01	1 Muḥarram 01
13	3 Muḥarram 01	2 Šawwāl 01	14e	2 Muḥarram 01	1 Šawwāl 01
	3 Rabīʿ II 01	3 Muḥarram 01		2 Rabīʿ II 01	2 Muḥarram 01
14e	4 Muḥarram 01	3 Šawwāl 01		Nāsī	2 Šawwāl 01
	4 Rabīʿ II 01	4 Muḥarram 01	15	3 Muḥarram 01	2 Ḏū al Qaʿda 01
	Nāsī	4 Šawwāl 01		3 Rabīʿ I 01	3 Muḥarram 01
15	5 Muḥarram 01	4 Ḏū al Qaʿda 01	16	4 Muḥarram 01	3 Ḏū al Qaʿda 01
	5 Rabīʿ I 01	5 Muḥarram 01		4 Rabīʿ I 01	4 Muḥarram 01
16	6 Muḥarram 01	5 Ḏū al Qaʿda 01	17e	5 Muḥarram 01	4 Ḏū al Qaʿda 01
	6 Rabīʿ I 01	6 Muḥarram 01		5 Rabīʿ I 01	5 Muḥarram 01
17e	7 Muḥarram 01	6 Ḏū al Qaʿda 01		Nāsī	5 Ḏū al Qaʿda 01
	7 Rabīʿ I 01	7 Muḥarram 01	18	6 Muḥarram 01	5 Ḏū al Ḥiğğa 01
	Nāsī	7 Ḏū al Qaʿda 01		6 Safar 01	6 Muḥarram 01
18	8 Muḥarram 01	7 Ḏū al Ḥiğğa 01	19e	7 Muḥarram 01	6 Ḏū al Ḥiğğa 01
	8 Safar 01	8 Muḥarram 01		7 Safar 01	7 Muḥarram 01
19e	9 Muḥarram 01	8 Ḏū al Ḥiğğa 01		Nāsī	7 Ḏū al Ḥiğğa 01
	9 Safar 01	9 Muḥarram 01	01	8 Muḥarram 01	8 Muḥarram 01
	Nāsī	9 Ḏū al Ḥiğğa 01	02	9 Muḥarram 01	9 Muḥarram 01
01	10 Muḥarram 01	10 Muḥarram 01	03e	10 Muḥarram 01	10 Muḥarram 01
02	11 Muḥarram 01	11 Muḥarram 01			
03e	12 Muḥarram 01	12 Muḥarram 01			

Table 1. Variations of Concordance between Calendars.

[168] Previous to AD 631, they came together in AD 599-600, in the seventh and eighth years of the cycle.

[169] In AD 599, the previous occasion when the two calendars started together, they were together for two years in succession before the intercalary month separated them again. In AD 566, the calendars stayed together for three years. If the luni-solar calendar were to be abolished at any time during those two or three years that the two coincided, there would be no problem of missing months.

Following this brief résumé of our knowledge of the calendars in use in the world with which Muḥammad was familiar, we have to strike a note of caution. Though we may be conversant with everything there is to know about different ways of marking the passage of time and the seasons - and the preceding paragraphs should illustrate how difficult it is to make such a claim! - in many cases we are unable to prove that a given calendar was in use in a specific community, or indeed that if it was in use, it was being used properly. This brings us to the concept of hindsight chronology which can introduce errors into chronological research. The question of whether Muḥammad arrived in Madīna on a Jewish feast illustrates this problem well: with our knowledge of the Jewish calendar, and assuming that Muḥammad arrived in Madīna on a given date, then we can calculate the concordance of that date in terms of the Jewish and Julian calendars and so conclude that he did or did not arrive during a feast. The problem is that this calculation is based upon the supposition that the reformed Jewish calendar was in use, that it was being used correctly, that Muḥammad did indeed arrive on that day, that the calendar in use among the pagan Arabs was of the sort we believe and that the weather had allowed sighting of the new crescent on the day predicted so that the date in question does indeed concord with our calculations!

When dealing with history which is so far removed and scarcely documented, the researcher will always be obliged to make assumptions. The danger lies in mistaking them for historical fact, until independent evidence has been found to support any given theory.

None of the works devoted to the unravelling of the calendrical puzzles surrounding the beginnings of Islam have been entirely convincing, despite the fact that they point to a wealth of different possible solutions and highlight sources which may possibly help to shed light on the subject, they have not avoided the trap of hindsight chronology and few even acknowledge the possibility that their sources themselves are part of the problem. In this sense, Lammens, with his highly critical approach, has done the most to distinguish points which seem more reliable.

Part of any serious investigation in this field has to be the search for vestiges of information which precede the introduction of the Hiğra calendar as the official calendar of Islam, details which seem insignificant in the context of the story being told, but which might point to climatic details, astronomical events or even the sequence of months. Only if we are fortunate enough to find

significant details will we be able to begin to unravel the enigma of the chronology of the beginning of Islam.

CHAPTER TWO : Astronomical and Natural Phenomena

Astronomy has become an increasingly important tool in historical research for two reasons. Firstly, computers and modern research now allow for extremely accurate calculation of the timing of astronomical phenomena such as eclipses and how they would be seen from anywhere on the earth's surface and secondly, study of old astronomical records, especially those of the Far East, is providing information about other phenomena, such as comets and meteor showers, which are not so amenable to astronomical calculation and prediction.

It is a striking feature of the astronomical records known to us from other parts of the world, that the period in question corresponds to a "dark age" when in general, records were either not kept or have since been lost![170] This means that we have to rely on astronomical calculations which in the case of solar and lunar eclipses or planetary movement are very reliable. In other areas such as the prediction of the time and intensity of meteor showers, or the movement of comets other than Halley's, astronomy cannot predict events with any accuracy.

In the cases when positional astronomy fails us, the historian is obliged to fall back on records of observations. It goes without saying that any records of comets or meteor showers noted anywhere in the world, at a period during Muḥammad's life are of great interest.[171] What the researcher must never forget is that a meteor shower observed in China might well not have been seen in Arabia. Without detailed records of observations made in Arabia, astronomical events witnessed elsewhere in the world can only serve to guide the researcher.

The researcher has the two tools of positional and observational astronomy which both have their weaknesses; the former giving no guarantee that the event was witnessed and the latter, if seen elsewhere, offering no guarantee that they were visible. When records do exist, the historian has

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[170] The most important astronomical records come from China. During the period which interests us in this study, the T'ang dynasty ruled. In AD 760 there was a rebellion known as the An hu-shan rebellion during which the capital of the T'ang dynasty, Chang-an, was devastated and most records lost.

[171] Other phenomena such as meteors are much more localised and therefore, of less interest.

also to be aware that astronomical phenomena were often reported with inadequate accuracy. Lastly, we have to remember that the lack of reports about an event does not mean that there was no event.[172] The ideal is, therefore, to have events which were not only observed, but whose accuracy can be verified by positional astronomy. Even in the rare cases when these two conditions are fulfilled, the researcher is not always able to identify the event with complete accuracy![173]

Eclipses

Using astronomical calculations, we are able to chart all the solar and lunar eclipses which could possibly have been seen either in Makka or Madīna, during Muḥammad's lifetime and to do so with absolute certainty that though all the eclipses may not have been observed, sightings which do not match the calculated data either did not happen, or have been wrongly dated.

Of all the astronomical phenomena, solar eclipses are, potentially the most useful and accurate in attempting to date events. The time and date of both solar and lunar eclipses can be calculated to a high degree of accuracy, but the advantage of the solar eclipse is that it is only visible over a relatively small area of the earth's surface, which can also be calculated, whereas the lunar eclipse should be visible anywhere that the moon is above the horizon. It goes without saying that all astronomical phenomena are subject to favourable viewing conditions. Without accurate reports on weather conditions, this factor has to remain an unquantifiable unknown when using astronomical data for historical purposes.

Solar eclipses are much rarer than lunar eclipses which can sometimes help to make them easier to identify. Tables 2 and 3 below list all solar and lunar eclipses which could have been visible.

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[172] This is an important distinction to keep in mind when discussing the story of meteor showers at the time of Muḥammad's birth. See below: Muḥammad's birth and the year of the Elephant, p. 93

[173] See below, note 199 about Halley's comet and the discussion about the identity of the eclipses reported in CHAPTER FOUR : Ḥadīṯ below.

Solar Eclipses[174]

Julian Date	Type	Mag.	Alt. 1	Time 1	Alt. 2	Time 2	Alt. 3	Time 3	Duration
534/04/29	Partial	+0.69	19	7.0	35	8.2	54	9.5	2.5
536/09/01	Partial	-0.86	31	16.0	14	17.2	-2	18.3	2.3
538/02/15	Partial	+0.67	39	9.4	51	10.7	57	12.0	2.6
540/06/20	Partial	+0.26	65	10.2	79	11.2	85	12.3	2.1
541/12/23	Partial	+0.54	24	15.4	10	16.6	-3	17.6	2.2
547/02/06	Partial	-0.82	19	7.8	34	9.1	48	10.6	2.8
550/11/24	Partial	+0.79	38	10.0	47	11.6	44	13.3	3.3
551/05/21	Partial	-0.84	81	12.6	56	14.4	35	15.9	3.3
559/06/21	Partial	-0.48	57	9.6	74	10.9	86	12.2	2.6
562/04/19	Partial	+0.89	79	12.3	57	14.2	35	15.8	3.5
563/10/03	Partial	+0.21	46	9.6	58	10.7	64	11.8	2.2
566/08/01	Partial	+0.94	24	7.3	41	8.5	61	9.9	2.6
569/11/24	Partial	-0.65	0	6.6	11	7.5	23	8.5	1.9
573/03/19	Partial	-0.25	58	10.3	66	11.2	69	12.1	1.8
577/12/25	Partial	+0.58	–	–	-4	6.3	9	7.4	1.1
584/02/17	Partial	-0.32	42	14.4	29	15.5	18	16.4	2.0
590/10/04	Partial	+0.83	52	13.8	33	15.4	15	16.8	3.0
592/03/19	Partial	+0.38	58	10.4	68	11.4	68	12.5	2.1
601/03/10[175]	Partial	+0.82	40	9.0	56	10.4	65	11.8	2.8
603/08/12	Partial	+0.87	2	18.2	-9	19.0	–	–	0.8
604/12/26	Partial	+0.83	43	13.1	31	14.7	16	16.1	3.0
606/06/11	Partial	+0.48	47	8.9	67	10.3	87	12.1	3.2
612/08/02	Partial	-0.82	4	18.2	00	18.5	–	–	0.3
613/07/23	Partial	-0.93	15	6.6	31	7.8	49	9.1	2.5
616/05/21	Partial	+0.80	20	6.9	37	8.2	56	9.6	2.7
617/11/04	Partial	+0.61	28	8.7	44	10.2	52	12.0	3.3
620/09/02	Partial	-0.77	13	6.8	28	7.8	45	9.1	2.3
624/06/21	Partial	-0.66	5	18.4	0	18.8	–	–	0.4
627/04/21	Partial	-0.05	62	10.2	67	10.6	72	11.0	0.8
628/10/03	Partial	-0.12	0	6.1	2	6.3	9	6.8	0.7
632/01/27[176]	Partial	-0.82	1	6.6	16	7.8	32	9.3	2.7
634/06/01	Partial	0.88	21	17.1	7	18.2	–	–	2.1

Table 2. Solar eclipses visible in Makka and Madīna.

Lunar Eclipses

Julian Date	Type	Mag.	Alt. 1	Time 1	Alt. 2	Time 2	Alt. 3	Time 3	Alt. 4	Time 4	Durtn.
531/06/15	total	+1.18	-15.7	17.44	0.3	18.73	13.5	19.84	27.3	21.13	3.69
531/12/10	total	+1.74	44.8	3.14	32.3	4.09	11.5	5.72	-0.2	6.67	3.53
532/11/28	partial	+0.42	-5.5	16.95	–	–	–	–	23.9	19.29	2.34
534/10/08	partial	-0.39	12.8	5.15	–	–	–	–	-19.5	7.58	2.43
535/04/04	total	-1.80	30.3	3.49	17.8	4.45	-4.7	6.12	-17.6	7.08	3.59
536/03/23	partial	-0.36	-26.5	16.16	–	–	–	–	3.1	18.37	2.21
536/09/15	partial	+0.63	10.0	18.77	–	–	–	–	45.7	21.48	2.71
538/01/31	partial	+0.65	45.0	3.11	–	–	–	–	5.3	6.06	2.95
538/07/27	partial	-0.94	-19.8	17.08	–	–	–	–	20.0	20.26	3.18
539/09/17	total	+1.36	38.6	1.79	28.4	2.93	12.6	4.37	-1.1	5.50	3.71
540/01/09	partial	-0.47	57.7	21.66	–	–	–	–	89.3	2400	2.34
542/05/15	total	-1.53	31.0	2.76	20.0	3.77	1.2	5.33	-11.6	6.34	3.58

[174] Details of the meaning of the different columns are given below note 250.

[175] This eclipse is reported in different chronicles such as *Chronicon Anonymum, Pseudo-Dionysianum.* Trans. Robert Hespel (Louvain: E. Peeters, 1989), 110, but is also recorded on an ostracon held in the Egyptian Museum at Turin. The text says, "On the fourteenth of Phamenôth of the fourth indiction, the sun was eclipsed in the fourth hour of the day and in the year in which Peter son of Palu, was made village official in Djeme." The village of Djeme was quite close to the town of Thebes, latitude 32.6° E and longitude 25.7° N., see Edwin Brown Allen, "A Coptic Solar Eclipse Record," *Journal of the American Oriental Society* 47 (1967): 267-269. In Makka, as the table shows, the eclipse was not total.

[176] This eclipse was supposed to indicate Muḥammad's death and the accession of Abū Bakr - there is no mention of Ibrāhīm. David Pingree, *The Thousands of Abū Ma'shar* (London: The Warburg Institute, 1968), 118.

Julian Date	Type	Mag.	Alt. 1	Time 1	Alt. 2	Time 2	Alt. 3	Time 3	Alt. 4	Time 4	Durtn.
542/11/08	total	-1.73	8.2	18.15	22.4	19.22	46.0	20.96	60.7	22.03	3.88
543/05/04	partial	+0.87	4.9	18.82	--	--	--	--	39.0	21.80	2.98
543/10/28	partial	-0.47	6.5	18.16	--	--	--	--	42.1	20.78	2.62
545/09/06	partial	+0.65	-1.4	17.95	--	--	--	--	32.9	20.65	2.70
546/03/03	total	+1.60	-34.9	15.24	-21.1	16.34	2.6	18.04	16.3	19.14	3.90
547/08/17	partial	-0.45	43.0	1.98	--	--	--	--	17.0	4.32	2.34
548/12/30	partial	-0.79	41.4	20.49	--	--	--	--	80.1	23.36	2.87
549/06/26	total	+1.02	44.9	23.89	39.9	1.46	37.2	1.86	22.8	3.43	3.54
550/06/15	total	-1.24	35.5	1.93	24.6	3.14	11.3	4.36	-3.1	5.57	3.64
550/12/10	partial	+0.42	67.8	1.52	--	--	--	--	36.8	3.85	2.33
552/04/24	partial	+0.53	13.4	19.40	--	--	--	--	41.6	21.85	2.45
553/10/07	total	-1.72	-29.4	15.69	-16.0	16.72	6.9	18.42	21.0	19.44	3.75
554/04/03	partial	-0.46	60.9	23.51	--	--	--	--	48.7	1.98	2.47
554/09/27	partial	+0.69	40.6	3.00	--	--	--	--	3.3	5.80	2.80
557/01/30	total	-1.72	-10.6	16.73	2.0	17.73	24.0	19.41	37.5	20.41	3.68
559/11/30	partial	+0.66	70.4	22.56	--	--	--	--	70.8	1.41	2.85
560/11/19	total	-1.75	57.7	2.21	43.1	3.28	19.8	5.02	5.9	6.10	3.89
561/05/15	total	+1.00	36.0	2.32	20.0	3.82	18.7	3.94	0.4	5.44	3.12
561/11/08	partial	-0.49	59.9	2.03	--	--	--	--	23.4	4.72	2.69
563/03/25	partial	-0.63	34.2	20.58	--	--	--	--	63.3	23.46	2.88
563/09/18	partial	+0.58	49.0	2.23	--	--	--	--	15.9	4.81	2.58
564/03/13	total	+1.69	60.9	22.49	69.3	23.58	62.1	1.33	49.6	2.42	3.93
564/09/06	total	-1.88	-2.2	18.00	10.4	18.94	32.0	20.60	43.5	21.54	3.54
565/03/02	partial	+0.38	71.2	23.18	--	--	--	--	63.1	1.56	2.38
567/01/11	partial	-0.78	16.0	5.23	--	--	--	--	-19.1	8.09	2.86
567/12/31	total	+1.75	44.5	20.69	57.2	21.64	79.1	23.28	87.3	0.23	3.54
569/06/14	partial	-0.05	5.7	19.20	--	--	--	--	14.9	20.01	0.81
570/05/06	partial	+0.41	29.1	3.17	--	--	--	--	2.3	5.37	2.20
570/10/29	partial	-0.32	45.5	20.96	--	--	--	--	75.1	23.17	2.21
571/04/25[177]	total	+1.73	6.1	18.82	18.2	19.79	37.3	21.45	46.2	22.42	3.60
571/10/19	total	-1.68	78.4	23.88	72.4	0.90	51.2	2.59	37.3	3.61	3.73
574/02/21	partial	+0.55	12.7	18.69	--	--	--	--	50.1	21.45	2.76
575/02/11	total	-1.76	73.5	0.95	60.3	1.94	37.2	3.63	23.6	4.63	3.68
576/07/26	partial	+0.20	-5.8	18.08	--	--	--	--	16.8	19.89	1.81
578/06/05	total	-1.26	-16.8	17.35	-3.0	18.46	11.3	19.67	23.5	20.78	3.43
581/04/05	partial	-0.52	23.0	4.00	--	--	--	--	-12.5	6.66	2.66
582/09/18	total	+1.81	48.0	2.27	36.5	3.21	14.8	4.87	2.3	5.80	2.53
583/09/07	partial	-0.60	-9.6	17.51	--	--	--	--	26.1	20.19	2.68
586/01/11	total	+1.76	13.8	5.40	1.8	6.35	-17.8	7.99	-28.1	8.94	3.54
586/12/31	partial	+0.42	15.0	18.53	--	--	--	--	45.6	20.88	2.35
587/06/26	partial	-0.19	34.9	1.96	--	--	--	--	19.9	3.58	1.62
588/11/09	partial	-0.30	19.0	4.98	--	--	--	--	-8.6	7.11	2.13
589/05/06	total	+1.60	37.7	2.31	27.1	3.30	7.7	4.91	-4.9	5.89	3.58
590/10/18[178]	partial	+0.78	30.2	19.88	--	--	--	--	69.3	22.79	2.91
592/03/04	partial	+0.48	52.3	2.33	--	--	--	--	16.9	4.93	2.60
593/08/17	total	+1.73	49.9	22.65	54.9	23.70	49.5	1.45	39.9	2.51	3.86
594/02/10	partial	-0.56	77.5	23.30	--	--	--	--	62.1	1.83	2.53
594/08/07	partial	+0.34	51.2	0.53	--	--	--	--	34.0	2.82	2.29
595/12/22	partial	+0.64	-22.9	15.41	--	--	--	--	10.0	18.24	2.83
596/06/16	total	-1.13	42.5	0.67	35.9	1.89	28.6	2.77	16.1	3.99	3.32
596/12/10	total	-1.76	12.6	18.33	26.5	19.41	49.6	21.15	64.1	22.23	3.90
597/06/05	total	+1.27	-19.1	17.16	-5.7	18.23	8.7	19.43	20.8	20.50	3.34
597/11/29	partial	-0.52	7.9	17.99	--	--	--	--	43.4	20.74	2.75
599/10/09	partial	+0.49	19.2	19.18	--	--	--	--	51.5	21.58	2.40
601/09/18	partial	-0.67	57.1	1.49	--	--	--	--	23.2	4.28	2.79
603/02/01	partial	-0.74	69.3	22.56	--	--	--	--	70.1	1.36	2.80
603/07/28[179]	partial	+0.57	15.6	19.73	--	--	--	--	44.5	22.59	2.86
604/07/16	total	-1.68	38.8	22.10	45.0	23.15	45.0	0.87	38.9	1.91	3.81
605/01/11	partial	+0.43	48.0	2.94	--	--	--	--	16.7	5.31	2.37

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[177] Mentioned in a horoscope calculated by Abū Ma'šar, ibid., 115.

[178] Mentioned in a horoscope calculated by Abū Ma'šar, ibid., 116. The text mentions other lunar eclipses: AD 610 March 15, this eclipse was not visible in Makka, AD 622 April 1, there was no eclipse, AD 630 August 28, a partial eclipse not visible from Makka. Ibid. 116-118.

[179] Mentioned in the chronicle of James of Edessa, though he gives the date as Thursday 16 July AD 603. See E. W. Brooks, "The Chronological Canon of James of Edessa," *Zeitschrift der Deutschen Morgenländischen Gesellschaft* 53 (1899): 322.

Julian Date	Type	Mag.	Alt. 1	Time 1	Alt. 2	Time 2	Alt. 3	Time 3	Alt. 4	Time 4	Durtn.
606/05/27	partial	+0.15	0.0	18.63	--	--	--	--	16.1	19.99	1.36
607/11/09	total	-1.64	-12.8	16.56	0.2	17.59	22.0	19.24	35.8	20.27	3.71
608/05/05	partial	-0.82	27.7	20.69	--	--	--	--	50.0	23.84	3.15
608/10/29	partial	+0.81	24.1	4.50	--	--	--	--	-13.9	7.43	2.93
610/09/08	partial	-0.52	62.3	23.87	--	--	--	--	45.6	2.43	2.56
611/03/04	total	+1.84	-10.4	17.10	2.7	18.09	25.6	19.79	38.8	20.77	3.67
614/01/01	partial	+0.62	84	23.54	--	--	--	--	58	02.35	2.81
614/12/22	total	-1.78	59	02.13	45	03.21	22	04.96	09	06.04	3.91
615/06/17	total	+1.41	44	00.32	40	01.33	29	02.74	19	03.74	3.42
615/12/11	partial	-0.53	64	01.78	--	--	--	--	27	04.55	2.77
617/04/26[180]	partial	-0.26	-02	18.25	--	--	--	--	22	20.23	1.98
617/10/20	partial	+0.46	36	03.59	--	--	--	--	05	05.91	2.32
618/04/15	total	-1.61	12	19.16	26	20.26	45	21.98	54	23.08	1.92
618/10/09	total	+1.71	16	18.97	29	19.92	51	21.54	63	22.49	3.52
619/04/04	partial	+0.69	30	20.35	--	--	--	--	60	23.38	3.03
621/08/08	partial	+0.44	38	02.40	--	--	--	--	08	04.96	2.56
622/02/01	total	+1.81	67	22.37	79	23.33	79	0.99	63	01.94	3.57
622/07/28[181]	partial	-1.82	06	04.85	--	--	--	--	-07	05.89	1.04
624/11/30	P. L.	-0.28	47	20.92	--	--	--	--	75	22.97	2.05
625/05/27[182]	T. L.	+1.32	-20.9	17.01	-11	17.82	05	19.17	17	20.25	3.48
625/11/20	T. L.	-1.63	78	00.77	64	01.79	42	03.43	29	04.46	3.69
626/05/17	P. L.	-0.96	24	03.25	--	--	--	--	-16	06.59	3.34
628/03/25[183]	P. L.	+0.31	-13	17.15	--	--	--	--	15	19.29	2.14
629/03/15	T. L.	+1.76	64	00.79	55	01.78	34	03.46	21	04.45	3.66
630/03/04[184]	P. L.	-0.68	-29	15.68	--	--	--	--	06	18.41	2.73

Table 3. Lunar eclipses visible in Makka and Madīna.

Meteor Showers

Meteor showers would not be unknown to a people who lived in the Arabian desert. Some showers appear regularly and astronomers name them after the constellation from which they seem to appear.[185]

What is less predictable, is the intensity of the shower; some years there will only be few meteors in the shower, while others produce what is often described as a meteor storm, as some of the texts in Table 4 illustrate. Weather permitting, meteor showers are like lunar eclipses in that they should be visible at any location for which they are above the horizon. Meteor orbits are much more complicated to calculate than those of the planets and our moon. This means that astronomers are not able to calculate historical meteor showers with any great degree of accuracy. Even for

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[180] The moon rose soon after the eclipse began.

[181] The moon set about half eclipsed before totality began.

[182] The moon rose totally eclipsed.

[183] The moon rose at about the time of mid-eclipse.

[184] The moon rose eclipsed, not long before the end of the eclipse.

[185] So we get the Leonid and the Perseid showers whose meteors seem to come from the constellations of Leo and Perseus respectively.

modern times, it has proved difficult to predict the intensity of showers. Nevertheless, records of showers can sometimes prove useful.

Date	Description	Place
530 April 09	Large shooting stars followed one another northwestwards; trails which never ceased appearing, numbered in thousands...[186]	China[187]
532 August 29	Stars fell like a shower...	China[188]
534 March		China
551 July 26	The night had innumerable meteors all gliding towards the north or northwest...	China
551 August 01	Small meteors glided along intersecting paths from all directions...	China
566 June/July	Stars fell like a shower...	Korea[189]
581 March 20	Stars fell like a shower...	Korea[190]
585 September 23	Hundreds of meteors scattered in all directions and came down...	China
586 June/July	Stars fell like a shower...	Korea[191]
625/26	The stars moved towards the North	Arabia[192]

Table 4. Meteor showers which could have been visible in Makka and Madīna.

Comets

As stated above, comets other than Halley's, are not so amenable to positional astronomy. Nevertheless, they are a rare and striking enough phenomena to merit comment and serve as a chronological guide in some cases. As comets are usually visible for a certain length of time, they will rarely provide as accurate a chronological fix as eclipses or meteor showers. Though comets do not seem to have attracted the attention of the Arab chroniclers in the early years of Islam, it is not impossible that a text may be discovered one day, and so records of observations of comets are included here for reference purposes.

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[186] Quoted in Barry Hetherington, *A Chronicle of Pre-telescopic Astronomy* (Chichester: John Wiley and Sons, 1996), 68. All shower descriptions are taken from Hetherington.

[187] See Beijing University (ed), *Zongguo gudai tianxiang jilu zongji* (A union table of ancient Chinese records of celestial phenomenon) (Kiangxu: Kexue Jishi Chubanshe, 1988).

[188] According to the chronicle of John of Asia, the peace agreement was made in AD 532. "On that same day, the stars were seen to dance in the sky." F. Nau, "Analyse de la seconde partie inédite de l'Histoire Ecclésiastique de Jean d'Asie," *Revue de l'Orient Chrétien* II (1897): 475. The same information is recorded in *Chronicon Anonymum, Pseudo-Dionysianum*, 39.

[189] See Hetherington, *A chronicle*, 71.

[190] Ibid.,73.

[191] Ibid.,74.

[192] Seen as a sign of the imminent defeat of the Romans by the Arabs. See *Chronicon Anonymum, Pseudo-Dionysianum*, 112, also *Chronique de Denys de Tell-Mahré*, IV, Trans. J.-B. Chabot. (Paris: Emile Bouillon, 1895), 5.

Date	Identification	Sighting
530 August 29	Halley's comet	China[193]
539 November 17		China
539 December/January	Perhaps same as previous	Syria[194]
541 March 31[195]		France[196]
542-3		Mediterranean[197]
560 October 09		China
561 September 26		China
565 April 21		China
565 July 23		China
568 July 20		China
568 September 03		China
574 May 16		China[198]
575 April 27		China
581 January 20		China
582 January 15		China
583 February 20		China
588 November 22		China
594 November 10		China
595 January 09		China
607 February 28	Halley's comet?[199]	China
607 April 04	Halley's comet?	China
608 October 22		China
615 July 02		China
617 July		China
617 October 06		China
626 March 26		China
634 September 20		China
639 April 30		China

Table 5. Comets which could have been visible in Makka and Madīna.

Volcanic Eruption?

Many of the chroniclers of this period, including Procopius, talk of the sun having been obscured for a period of twelve to eighteen months. "And it came about during this year that a most dread

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[193] See Beijing University (ed), *Zongguo gudai tianxiang jilu zongji.* All Chinese sightings are quoted from this work.

[194] Brooks, "The Chronological Canon of James of Edessa," 320. Procopius says that the sun was in Capricorn (November-December) and the comet in Sagittarius. Procopius, *History of the Wars*, I, 287.

[195] In fact the sighting is given as "Easter 541", which fell on 31 March, see A. Cappelli, *Cronologia, Cronografia e Calendario Perpetuo: dal principio dell'èra cristiana ai nostri giorni.* (Milano: Ulrico Hoepli, 1988), 54.

[196] See F. Baldet, "Liste Générale des Comètes de l'Origine à 1948," *Annuaire du Bureau des Longitudes pour 1950* (1950): B24-B27.

[197] This comet was taken to be the sign of coming problems: "Et dans la suite, comme beaucoup observaient ce qui se produirait après ce signe, ils virent de nombreux combats, la sécheresse de l'air, la soif et le manque de pluie, l'agression dans les villes...." See *Chronicon Anonymum, Pseudo-Dionysianum*, 59. In the chronicle of Michael the Syrian, the comet is dated as having been seen in the 11th year of Justinien, (AD 538), but is probably the same one. See *Chronique de Michel le Syrien: Patriarche Jacobite d'Antioche (1166-1199)*, Trans. J-B. Chabot. (Paris: Ernest Leroux,1901), v. 2, 205.

[198] See also *Chronicon Anonymum, Pseudo-Dionysianum*, 107f., and Nau, "l'Histoire Ecclésiastique de Jean d'Asie," 492f.

[199] There is some doubt as to which of the two sightings for AD 607 was in fact Halley, though the specialists tend to opt for the February sighting. See F. Richard Stephenson and Kevin K. C. Yau, "Far Eastern observations of Halley's comet: 240 BC to AD 1368," *Journal of the British Interplanetary Society* 38 (1985): 204-205. Though it is of little direct interest to the present study, which of the two observations could have been Halley's comet, it is worth noting that there is some doubt about these sightings.

portent took place. For the sun gave forth its light without brightness, like the moon, during the whole year, and it seemed exceedingly like the sun in eclipse, for the beams it shed were not clear nor such as it is accustomed to shed. And from the time when this thing happened men were free neither from war nor pestilence nor any other thing leading to death. And it was the time when Justinian was in the tenth year of his reign."[200] The same event is recorded, with additional detail, in the Chronicon Anonymum: "The sun was darkened and covered in shadows, for one and a half years, which is eighteen months. Even though rays were visible for two to three hours, they were feeble, so much so that the fruits ceased to ripen and wine tasted horrible."[201] This chronicle dates the event in AD 530-531. Michel le Syrien dates the event in AD 536-7 and describes the event in terms similar to the Chronicon Anonymum.[202]

One hypothesis, is that this event was caused by a volcanic eruption throwing clouds of dust into the atmosphere. So far the reason for the sun's rays being blocked has not been identified, nor are we aware of it being mentioned in South Arabian or Arabic sources.

Earthquakes

Records of earthquakes are quite common in Syrian chronicles for a period between AD 530 and AD 570, but then become more scarce.[203] There are none recorded which could be the earthquake which is supposed to have occurred in AH 5.

Plagues

As there are some traditions which link Abraha's attack on Makka to the first outbreak of measles and smallpox in the region,[204] it is obviously worth checking to see what reports there are of epidemics. According to Syrian chronicles, there was widespread plague in the region and that the

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[200] As Justinian became Emperor on 4 April AD 527, we have a date for this event of AD 537. Procopius, *History of the Wars*, I, 329.

[201] *Chronicon Anonymum, Pseudo-Dionysianum*, 53.

[202] See *Chronique de Michel le Syrien*, v. 2, 220.

[203] *Chronicon Anonymum, Pseudo-Dionysianum* records earthquakes for AD 538-9, AD 539 November, AD 541 January, AD 542-3, AD 550 August 7,AD 552 June, AD 555 May, AD 556-7, AD 558-9, AD 563 September, AD 564, June and AD 568 January, pp.54-106, but no others up to the year of Muḥammad's death.

[204] Guillaume, *The Life of Muhammad*, 26.

plague continued on and off for a number of years.[205] The first plague, in AD 543-4,[206] contains a description of the classical symptoms of the bubonic plague which not only devastated people and animals, leaving entire villages empty, but also had a longer-term effect on agriculture and food production. In an aside, to the description of the events, the chronicler tells us that: Chosroes was king of Persia, Justinien emperor of Rome, Arethas, son of Gabala was king of the Arabs..., that Abraha was king of the Himyarites... and Andoug king of the Cushites.[207] This outbreak was said to have lasted three years.[208]

Some three years later, in 858 of the Alexandrine era (AD 546-7), there are reports of "famine, plague, madness and rabies" spreading into regions of Mesopotamia.[209] The famine started affecting people in AD 547-8 and lasted for eight years, three of which were exceptionally severe.[210]

The years 867 and 871 of the Alexandrine era (AD 555-6 and AD 559-60) saw two outbreaks of rabies (?) in the town of Amida in Mesopotamia. The chronicle contains a description of people, "barking like dogs, bleating like goats and mewing like cats...and they would become furious and bite each other...".[211] Between these two outbreaks, in 869 (AD 557-8), there was a further outbreak of the plague in Amida, which is estimated to have killed 35,000 inhabitants.[212]

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205 "L'an huit cent cinquante-cinq d'Alexandre il y eut une peste grande et violente dans le monde entier, aux jours de l'empereur Justinien.... on pouvait les voir frappés... du *mal des tumeurs de l'aine*, qui dans notre langue à nous, Syriens, s'interprète "plaie des tumeurs" et qu'eux-mêmes appelaient "bubons"....elle montra aussi son action chez les animaux, non seulement chez les animaux domestiques mais aussi chez les (animaux) sauvages...". *Chronicon Anonymum, Pseudo-Dionysianum*, 59-84. Procopius, *History of the Wars*, II, 451-479, gives quite a detailed account of the plague, saying that, "it started from the Egyptians who dwell in Pelusium. Then it divided and moved in one direction towards Alexandria and the rest of Egypt, and in the other direction it came to Palestine on the borders of Egypt; and from there it spread over the whole world, always moving forward and travelling at times favourable to it.... (453) And in the second year it reached Byzantium in the middle of spring...(455) and ran a course of four months, and its greatest virulence lasted about three."(465).

206 See above, note 49, 6 for a description of the Alexandrine era.

207 *Chronicon Anonymum, Pseudo-Dionysianum*, 83.

208 Ibid., 89.

209 Ibid., 84-86.

210 The chronicle of James of Edessa adds that there were even acts of cannibalism because of the famine. Brooks, "The Chronological Canon of James of Edessa," 321.

211 Ibid., 86-89.

212 Ibid., 89.

CHAPTER THREE : The Qur'ān[213]

According to the Muslims, the Qur'ān is the authoritative collection of God's revelation to humankind through Muḥammad. It therefore follows that the Qur'ān must be the first source of possible information about events during the formative years of Islam. Because of its sacred nature, it would be a great mistake for a researcher to consider the Qur'ān as just another book, albeit a book of revelation. It is important to know something of the history of this text before attempting to use material contained in it.

From the time of the first revelation to Muḥammad, the words he transmitted to the believers were revered. Though some of the revelations were written down on any available material: planks of wood, pieces of leather, palm leaves, animal ribs, shoulder blades, papyrus, parchment or flat stones, above all they were memorised.

Tradition tells us that after the battle of Yamāma[214] ʿUmar ibn al Ḫaṭṭāb urged Abū Bakr,[215] to make a written copy of the revelation because a great number of Muslims who knew large parts of it by heart had been killed in the battle. After some hesitation, Abū Bakr commissioned Zayd ibn Ṯābit to carry out the work. The text was collected and written down. After Abū Bakr's death this text passed to the new Caliph, ʿUmar ibn al Ḫaṭṭāb,[216] and upon his death to his daughter, and Muḥammad's widow, Ḥafṣa. Plausible as this tradition sounds, there are indications that it probably is only a tradition: later events and traditions seem to ignore this text as an authoritative collection of revelations received by Muḥammad; the majority of those who died in the battle of Yamāma were recent converts to Islam and if the collection had been an authoritative one then it would not have passed to Ḥafṣa after her father's death, but rather to the next Caliph.

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[213] See *EI*², s.v. Kor'ān, and William Montgomery Watt and Richard Bell, *Introduction to the Qur'an* (Edinburgh: University Press, 1970), passim.

[214] A battle fought against Musaylima of the bani Ḥanīfa who claimed a divine mission to succeed Muḥammad. The battle probably took place in January AD 633.

[215] The first Caliph (AD 632-34) and close companion of Muḥammad. See glossary.

[216] The second Caliph (AD 634-44). See glossary.

A second, and more probable, tradition concerning the first collation of the revelations into one authoritative collection, tells of its having taken place under the reign of ʿUṯmān ibn ʿAffān.[217] During campaigns in Armenia and Azerbaijan, disputes broke out between Syrian and Iraqi factions in the Muslim army, over the Qur'ānic texts used in their prayers. This was serious enough for General Ḥuḏayfa, commander of the army, to ask the Caliph to produce an authoritative version of the Qur'ān. Once again Zayd ibn Ṯābit is named as being asked to carry out the work, though this time, at least three other names are associated with his in the work: ʿAbd Allāh ibn Zubayr, Saʿīd ibn al ʿĀṣ and ʿAbd al Raḥmān ibn al Ḥāriṯ. We are told that the commission worked on the principle that if variants of the same text were found, the version closest to the Qurayš dialect was to be retained as this was the dialect that Muḥammad would have spoken. The text was also compared to the version that Ḥafṣa had in her possession. A copy of the new authoritative text was sent to Kufa, Basra, Damascus, perhaps also to Makka and one was retained in Madīna. ʿUṯmān then had the older versions of the text destroyed to avoid confusion and dispute.

At the time of the recording of this text in the middle of the seventh century, Arabic was written in, what would be considered today, a truncated form, that is without the dots which distinguish between similarly shaped letters, the short and long vowels and the signs used to denote the absence of a vowel or the doubling of a consonant.[218] The problems that this causes in the search for a definitive text of Muḥammad's revelations is illustrated in a book written by Ibn Abī Dāwūd (d. AD 928), called *Kitāb al Maṣāḥif*, or "The Book of Readings" or "Codices" which lists some fifteen primary codices and nearly the same number of secondary ones. Two of these versions were particularly revered. ʿAbd Allāh ibn Masʿūd had been Muḥammad's personal servant and his codex was revered in Kufa, while Ubayy ibn Kaʿb who had been Muḥammad's secretary for many years had another codex which was popular in Syria. Though most of the variations in the different codices are to be found in the vocalisation and punctuation, they also contain some more important differences.

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[217] The third Caliph (AD 644-56). See glossary.

[218] If a similar system were to be used in English, then "hd" could be read "ahead", "had", "hid", "hide", "head", "heed", "hoed"...

By the beginning of the eighth century, the Arabic script had evolved enough for the caliph ʿAbd al Malik (AD 685-705) to recognise the need for another authoritative version of the text.[219] Publication of Ibn Muǧāhid's book, *The Seven Readings*, in the late ninth or early tenth century, helped to clarify the situation. In his book, Ibn Muǧāhid postulates that Muḥammad received his revelation in seven slightly different versions, each version having two variants.[220] This theory was accepted and backed by the law. Though specialists know of these variants and study them, many Muslims know little about them. With the advent of the printed text the Ḥafṣ variant of the ʿĀṣim reading has become the standard text used by Muslims.

When looking for historical events which are mentioned in the Qur'ān the main texts which we will have to consider are Sūra 105 concerning the "People of the Elephant" who attempted to attack Makka, Sūra 34:15-16 and its relation to the destruction of the Mārib dam,[221] Sūra 9:36-37 the words allegedly said by Muḥammad, during the "Farewell Pilgrimage"[222] about the calendar.

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[219] There are accounts of certain readings being condemned: Malik ibn Anas, for example, declared illicit any prayer led by an imām using Ibn Masʿūd's reading, see Watt, *Introduction to the Qur'an*, 48.

[220] This is an oversimplification of the question, as other authors postulate ten or even fifteen versions. For our purposes this suffices. The seven readings with their two variants can be linked with different geographical locations:

Location	Reading	Variant 1	Variant 2
Madīna	Nāfiʿ (d. AD 785)	Warš (AD 812)	Qālūn (AD 835)
Makka	Ibn Kaṯīr (AD 737)	al Bazzī (AD 854)	Qunbul (AD 903)
Damascus	Ibn ʿĀmir (AD 736)	Hišām (AD 859)	Ibn Ḏakwān (AD 856)
Basra	Abū ʿAmr (AD 770)	al Būrī (AD 860)	al Sūsī (AD 874)
Kufa	ʿĀṣim (AD 744)	Ḥafṣ (AD 805)	Šuʿba (AD 809)
Kufa	Ḥamza (AD 772)	Ḫalaf (AD 843)	Ḫallād (AD 835)
Kufa	al Kisā'ī (AD 804)	al Dūrī (AD 860)	Abū al Ḥāriṯ (AD 854)

[221] Situated in South Arabia, this dam is important because of the historical information contained in inscriptions about its upkeep.

[222] The only pilgrimage made by Muḥammad once he had fled Makka, he returned some ten years later. Many sources say that he did so because the cycle of intercalation was completed that year, thus allowing him to make the calendar change without causing disruption as happened in 1582 when 10 days were 'removed' from the Julian calendar in order to conform with the new Gregorian system. See below: The Farewell Pilgrimage, 78.

Abraha

Sūrat al Fīl (105) and, to a lesser extent, Sūrat Qurayš (106),[223] talk of the Year of the Elephant but do not link it to Muḥammad's birth. The text, which contains vocabulary used only once in the Qur'ān, raises questions about interpretation.[224]

The "flights of birds" (*ṭayran abābīl*) is unique to the Qur'ān and the commentators do not know what to make of the *abābīl.* Jeffery lists the following possibilities:

i. *abābīl* is the plural of *abāla* and means "flock" or "flight". The word is of foreign origin.

ii. The word has nothing to do with birds, but indicates another calamity and comes from *abīla* which means "vesicle". There is a tradition that Abraha and his army were beaten by smallpox and a suggestion is that the Persians used the word to mean "smallpox" having borrowed it from *ab* "father" and *abīl* "lamentation".

iii. Another ingenious suggestion is that *ṭayran abābīl* was originally a misreading of *tayr bābīl* or "Babylonian arrows".

Jeffery concludes that the word is probably of foreign origin, but as of yet the source is unknown.[225]

Some sources give more detailed descriptions of the *abābīl,* describing them as having beaks like birds and feet like dogs and as being white black and green.[226] Newby states that, "This confused description is suggestive of the *ḥayyôt* (who, according to some sources, destroyed Sennacherib's army which was attempting to take Jerusalem[227]) mentioned in Ezechiel's vision,[228] which are

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[223] There has been much discussion amongst specialists whether 105 and 106 were originally one text. See below.

[224] "Did you not see how your Lord treated the people of the elephant? Did He not confound their strategy? Did He not send flights of birds (ṭayran abābīl) against them, that threw stones (siğğīl) at them, so that the Lord made them like beaten foliage?" Sūra 106 continues, "because of the understanding of the Qurayš during the winter and summer caravan. Let them adore the Lord of this temple who has provided them against hunger and protected them against fear."

See: Irfan Shahid, "Two Qur'ânic Sûras: al-Fîl and Qurays," in: *al Qâdî, Wadâd, Editor. Studia Arabica et Islamica: Festschrift for Ihsân Abbâs* (Beirut: American University of Beirut, 1981): 429-436.

[225] Arthur Jeffery, *The Foreign Vocabulary of the Qur'an* (Baroda: Oriental Institute, 1938), 44-45.

[226] See Ṭabarī, *Ğāmi' al Bayān 'an Ta'wīl Āy al Qur'an,* (Cairo, 1954): v. 30, 299. MS 727 of the Qarawīyūn Library describes the birds as being, "black like *naḥāmīm* (flamingoes)." Guillaume, "New Light on the Life of Muhammad," 14.

[227] See Bible, 2 Kings 18-19.

[228] See Bible, Ezechiel 1 & 10.

usually identified with the cherubim. In the *Sefer Ḥanôk* these cherubim are ranked as a separate class of angels and are considered as angels of destruction."[229]

The "stones" (*siğğīl*) are slightly less problematic. In the Qur'ān (51:21- 46), we find the story of the visit made to Abraham and Sara by "honoured guests"[230] who prophecy the birth of a son to the elderly couple. When asked the purpose of their presence, the guests say, "We have been sent against a sinful people, to throw *stones of clay* at them".[231]

Another version of the story of Sodom and Gomorra has, "We rained down upon them *marked stones of siğğīl.*"[232] (Sūra 11: 82)

The fact that *siğğīl* was replace by *ṭīn* in one of the versions led the commentators to interpret *siğğīl* as meaning "clay". The word is probably of Persian origin.[233]

The linking of the Abraha text with that of the story of Sodom and Gomorra reinforces the idea that the defeat of Abraha was an act of divine retribution, but does not lead us any closer to a datable event.

As there are no significant variations to these verses,[234] we are left with a text which does not provide any obvious clues as to the dating.

Ma'rib Dam

Linked to the story of the invasion of Makka is another text which talks of the Sabā' and is thought to refer to the Ma'rib dam in South Arabia.

Al ʿArim, where the floods happened, was first of all understood to be a place name, but later studies showed that *al ʿarim* has been borrowed from South Arabian and means "the dam".[235] It is therefore believed that this text refers to the Ma'rib dam which, from inscriptions on it, we know

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[229] Gordon B. Newby, "Abraha and Sennacherib: A Talmudic Parallel to the *Tafsīr* on *Sūrat al-Fīl*," *Journal of the American Oriental Society* 94(4) (1974): 436.

[230] The Bible has "three men" who go on do destroy Sodom and Gomorra. Bible, Genesis 18: 1-15.

[231] "li nursil ʿalayhim ḥiğāra min ṭīn." Sūra 51: 32-33.

[232] Sūra 11: 82. Yet another version has , "We rained down upon them *stones of siğğīl.*" Sūra 15: 74.

[233] Jeffery, *The Foreign Vocabulary of the Qur'an*, 164-165.

[234] See: Arthur Jeffery, *Materials for the History of the Text of the Qur'ān* (Leiden: E. J. Brill, 1951).

[235] *Le Coran*, trans. Régis Blachère, Sūra 34: 15.

was damaged, and subsequently repaired, in about AD 450 and AD 540. Historians believe that the dam eventually became unusable during the life of Muḥammad, and that this is what the text is referring to.

The text itself, is found in Sūra 34 - called *Sūrat Sabā'* - and talks of Solomon and his death in verses 10 - 14, then follow the verses about the flood and the text continues, "We put between them and the towns that We have blessed, linked towns at a measured distance (saying), "Travel between them night and day in safety." They said, "Lord, stretch the distance of our travels", and they did themselves wrong so We turned them into legends (*aḥādīṯ*) and tore them (apart) completely." As Abraha is named in one of the inscriptions on the dam, the question has to be asked whether the Sabā' who became legends could have done so between the Year of the Elephant and before Muḥammad left Makka for Madīna.[236]

This verse contains no significant variants which could either help obtain a more precise reading, or point towards a less vague chronology.

We are therefore obliged to echo Rippin when he concludes that, "as historians, we have no basis for deciding on the "historical kernel" unless we have some other sort of external and neutral verificatory information."[237]

Al Nasī'

The verses attributed to revelation during the Farewell Pilgrimage are, potentially, of great importance to any study of the chronology of the early years of Islam. Much of the discussion surrounding the meaning of the term *nasī'* has been evoked in a previous section[238] and we will restrict ourselves here to the Qur'ānic text: "The number of months, before God, is twelve in God's

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[236] This Sūra is generally considered to have been revealed at Makka.

[237] Andrew Rippin, "Epigraphical South Arabian And Qur'ānic Exegesis," *Jerusalem Studies in Arabic and Islam* 13 (1990): 174.

[238] See above: Conclusion

The different theories presented in the studies which we have looked at so briefly here contain some very interesting information and theories. Nevertheless, the theories all leave unanswered questions, or seem to ignore information which does not appear to fit the theory. None of the authors consider the problem of hindsight chronology, and none are able to present any independent evidence to corroborate at least one chronological point. The major weakness of all these theories is that they are attempting to prove a point, leaving the reader to wonder if all facts, even those which contradict the theory, have been presented for his/her consideration.

The Hiğra Calendar, 20f.

Book, the day he created the skies and the earth, of them, four are sacred. That is the true religion, so do each other no wrong during them... The nasī' is an increase of unbelief whereby the unbelievers go astray; one year they make it profane and another they make it sacred in order to conform to the number that God made sacred. They profane that which God made sacred..."[239]

Blachère draws from all sources in an effort to re-create the text of the Farewell Address (*ḫuṭbat al wadāʿ*) made by Muḥammad.[240] One of Blachère's first conclusions is, "... we are no longer able to define whether one or other specific theme - later integrated into the Farewell Address - should be placed in the discourse of ʿArafa, or that of Mīna. At the most, one could accept that the subject in consideration was part of one of the sermons pronounced by Muḥammad during these two moments of the pilgrimage of AH 10. Even here, one has to be circumspect. "[241] When it comes to the question of calendar practices, the author notes that the wording is very close to that of the Qur'ān, which would probably have helped the person telling of the event to remember the words,[242] which is a reminder that the text was revealed at some not very well defined time, prior to the pilgrimage.

Verse 37 has a number of variants,[243] but none of them contribute anything of chronological significance.

Conclusion

Interesting and as important as they are, the texts found in the Qur'ān do not contribute, of themselves, to a more precise understanding of the chronology of the life of Muḥammad and events of the early years of Islam. This is not a negation of the inherent value of the Qur'ān, rather it is the recognition that we are unable to draw any historical conclusions from these texts.

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[239] "Inna ʿiddata al šuhūr ʿinda llāh iṯnā ʿašara šahran fī kitābi llāh yawm ḫalaqa al samawāt wa l arḍ minhā arbaʿtun ḥurum ḏālika al dīn al qayyim falā taẓlimū fīhinna anfusakum ... Innamā al nasī'u ziyādatun fī al kufr yuḍallu bihi alladīn kafarū yuḥillūnahu ʿāman wa yuḥarrimūnahu ʿāman liyuwāṭi'ū ʿiddata mā ḥarrama llāh fayuḥillū mā ḥarrama llāh ..." Qu'rān 9:36-37.

[240] Régis Blachère, "L'allocution de Mohamet lors du Pélerinage d'Adieu," *Melanges Massignon* (France: L'Institut Français de Damas, 1956), 223-249.

[241] Ibid., 231-2.

[242] Ibid., 238-9.

[243] There are three variant readings for *nasī*: *nas'u*, *nasū'u*, and *al nas'u* from secondary codices not even mentioned in note 220 above.

CHAPTER FOUR : Ḥadīṯ[244]

After the Qur'ān, the collections of traditions (ḥadīṯ) concerning the life, words and actions of Muḥammad are the next most important source of information about the formative years of Islam. Here again, we have a corpus of material which has its own history. At the death of Muḥammad, the teachings of the Qur'ān, did not cover all the problems with which Muslims were faced daily, and so the community tried to find examples from Muḥammad's life on which to base decisions about what was permitted (*ḥalāl*) or forbidden (*ḥarām*) in subjects which range from food, purity, courtesy and good manners, to heaven and hell or dogma and law.

In order to obtain this information, the community turned to Muḥammad's "companions" (*ṣaḥābī*) who were anyone who had known him from his closest friends and wives, to people who had simply met him. Later they would turn to those who had known and learned from the companions, a group classed as the "followers" (*al ṭābi'ūn*) and later still, the "followers' followers" (*ṭābi'ū al ṭābi'īn*). The ḥadīṯ soon came to be considered as consisting of two parts: the "chain" (*isnād*) of those who reported having heard the ḥadīṯ from someone who had heard it from ... Muḥammad or one of his companions and the actual "teaching" (*matn*).

Traditional ḥadīṯ criticism was largely based upon the study of the companions, followers and followers' followers: whether they were known to be honest and devout Muslims, and could they have met the person(s) they were supposed to have passed the tradition on to calculating both by dates and where the individuals were known to have lived and studied. From this science of "knowledge of the men" (*ma'rifat al riğāl*) came the biographical treatises, most commonly ordered according to the closeness of the "transmitters" to Muḥammad (*ṭabaqāt*) and the classification of the ḥadīṯ according to their orthodoxy: from orthodox with no weakness (*ṣaḥīḥ*) to a slightly weak isnād or a question about the orthodoxy (*ḥasan*) to doubts about either their contents or the transmitter (*ḍa'īf*). In their turn, doubtful ḥadīṯ were classified according to

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[244] See *E.I.*^{2}, *s.v.* Ḥadīth, and Ṣiddīqī, *Ḥadīth Literature*, passim.

whether words had been added, they originated from one weak source or were considered to be completely false (*mudrağ*, *matrūk*, *mawḍū'*).

The earliest collections of ḥadīṯ were arranged according to the transmitters, and the collection of ḥadīṯ attributed to one transmitter was known as a *musnad* a term later applied to the whole collection of ḥadīṯ. The most important example of this form of collection which we have today is the Musnad of Aḥmad ibn Ḥanbal (d. AD 855). The majority of collections, however were arranged according to subject matter and we have six collections which are considered to be the authoritative and orthodox sources, second only in importance to the Qur'ān. These are the works by: al Buḫārī (d. AD 870), Muslim (d. AD 875), Ibn Māğā (d. AD 886), Abū Dāwūd (d. AD 888), al Tirmiḏī (d. AD 892) and al Nisā'ī (d. AD 915).[245]

The authority of these collections was not recognised overnight and criticism of some of their contents not uncommon. Nevertheless, these are now recognised as the standard and authoritative collection, and have the added advantage of having been indexed,[246] along with the *Musnad of Aḥmad ibn Ḥanbal*, the *Musnad of al Darīmī* and the *Muwaṭṭa' of Malik*.

As the purpose of this study is to look for possible chronological material within the corpus of ḥadīṯ literature, an initial search was made for day names, feast-days and month names, numbers of days or months, as well as for natural phenomena such as eclipses, comets, planets, shooting stars and earthquakes. It is the natural phenomena which interest us the most here.[247]

Eclipses

Though studies have been made which investigate what eclipses could have been seen during the life of Muḥammad,[248] none consider the detailed descriptions of the events which are to be found

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[245] See below, note 250 for full Bibliographical details.

[246] A. J. Wensinck, *Concordance et indices de la tradition musulmane* (Leiden: E.J. Brill, 1933-1969).

[247] No mention of comets or the planets was found in Wensinck. Earthquakes are mentioned, but usually in relation to the signs of the end of time. One text quoted in the *Sunan Dārimī*, talks of an earthquake in the time of ʿAbd Allāh (the author), but it provides no chronological evidence for dating the event.

[248] Leone Caetani, *Annali dell'Islam* (Hildesheim: Georg Olms Verlag, 1972).

Leone Caetani, *Chronographia Islamica* (Paris: Paul Geuthner, 1912).

Eduard Mahler, "Uber zwei zu al-Madîna gesehene Sonnenfinsternisse: (8-10 A.H. und 64-72 A.H.)," *Zeitschrift für die Kunde des Morgenlandes* 14 (1900): 108-114.

N. Rhodokanakis, "Uber zwei zu al-Madîna gesehene Sonnenfinsternisse: (Schilderung des Gebetes, wie es Mohammed bei dieser Gelegenheit vor der versammelten muslimischen Gemeinde in der Moschee leitete," *Zeitschrift für die Kunde des Morgenlandes* 14 (1900): 78-108.

in ḥadīṯ literature.[249] For the purpose of this study we need to examine this corpus in order to discover any details which could lead to historically valid conclusions about the events it claims to describe. It follows, therefore, that we will be more interested in the body (*matn*) of the ḥadīṯ than in its chain of transmission (*isnād*), though the latter can be of interest in confirming *matn* material, or indicate links between seemingly unrelated texts. As the eclipse material is quite extensive (198 texts), most information will be given in table-form in order to save space and avoid repetition while permitting us to highlight anything which deserves further study.[250]

Sources	Number of texts
Mālik	4
Ibn Ḥanbal	25
Al Dārimī	6
Buḫārī	38
Muslim	26
Abū Dāwūd	20
Ibn Māğa	5
al Nisā'ī	43

Table 6. Distribution of eclipse texts in the Ḥadīṯ.

A quick survey of the texts shows that not all of them have the same value for a study such as this. Some accounts tell of Muḥammad calling for communal prayer, the liberation of slaves, or refuting the idea that eclipses could occur because of the death or birth of a person, while others concentrate on whether he prayed out loud or silently, without providing any historical

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Virginia Vacca, "Le preghiere dei musulmani durante le eclissi," *Calendario del R. Osservatorio Astronomico di Roma* 11 (1935): 3-10.

[249] All the texts considered here, were identified through: Wensinck, *Concordance et indices de la tradition musulmane.* See Table 6 below for their distribution.

[250] The tables present the texts in the chronological order of the death of the authors of the collections:

Mālik b. Anas (d. AD 795) *al Muwaṭṭa'*, Cairo 1952-53, 2v. (Mālik'): See "Kitāb Ṣalāt al Kusūf," 1: 186-189.

Aḥmad b. Ḥanbal (d. AD 855) *Musnad*, Cairo 1895, 6v. (Ibn Ḥanbal): See 1: 143, 346, 459; 3: 318, 374, 382; 4: 245, 267, 269; 5: 16-17, 27, 62, 134; 6: 53, 65, 349, 354-5.

Abū Muḥammad ʿAbd Allāh al Dārimī (d. AD 868) *Sunan*, Damascus 1930, 2v. (Al Dārimī): See "Bāb al Ṣalāt ʿinda al Kusūf," 1: 359-360.

Abū ʿAbd Allāh al Buḫārī (d. AD 870) *Saḥiḥ*, Leyden 1862-1908, 4v. (Buḫārī): See 1: 59, 192-3; "Kitāb al Kusūf," 264-275; 2: 305; 3: 445-446; 4: 108.

Muslim (d. AD 875) *Saḥiḥ*, Cairo 1955-56, 5v. (Muslim): See "Kitāb al Kusūf," 2: 618-630.

Abū Dāwūd (d. AD 888) *Sunan*, Cairo 1952, 2v. (Abū Dāwūd): See "Kitāb al Ṣalāt," 1: 268-273.

Abū ʿIsā Muḥammad ibn ʿIsā al Tirmiḏī (d. AD 892) *Ǧāmiʿ*, Homs 1965-1968, 10v. (Tirmiḏī).

Ibn Māğa (d. AD 896) *Sunan*, Cairo 1952-53, 2v. (Ibn Māğa): See "Kitāb Iqāmat al Ṣalāt," 1: 400-402.

information and can therefore be eliminated before we go any further.[251] In the remaining texts, we will look at the events which provide the background to the report of an eclipse, the names of people, other than Muḥammad, who supposedly led the prayer and any astronomical details.

Astronomical Eclipses

Before going further with the textual study, we have to remind ourselves that our aim is to find links between the texts and astronomical events, the details of which can be calculated to a great degree of accuracy,[252] which leads us to one very important common denominator in all the texts under scrutiny - even those already eliminated - namely that ḥadīṯ literature only seems to talk of solar eclipses.[253] Computation shows that there were no total solar eclipses visible in Makka (21.43N, 39.82E) or Madīna (24.50N, 39.58E) during Muḥammad's life-time. Of the partial solar eclipses listed, few would have been very noticeable unless there were special circumstances such as their happening at low altitude or in special climatic conditions such as dust storms or clouds.

Table 7[254] gives all the solar eclipses which could possibly have been seen in Makka between AD 612 - 622 and Madīna between AD 622 - 634[255] and it cannot be stressed enough that no other

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al Nisā'ī (d. AD 915) *Sunan*, Cairo 1930, 8v. (al Nisā'ī): See "Kitāb al Kusūf," 3: 124-154.

[251] This reduces the number of texts to 167.

[252] All the calculations for the solar eclipses were computed by Professor F.R. Stephenson, on the basis of a detailed recent investigation of the Earth's past rotation. See F. Richard Stephenson and L.V. Morrison, "Long-term fluctuations in the Earth's rotation: 700 BC to AD 1990," *Phil. Trans. Roy. Soc.* 351 (1995): 165-202. I would like to extend my thanks to him for all his help.

Allowance for changes in the rate of the Earth's rotation, the clock error ΔT, ranges between 4640 seconds in AD 610 and 4460 in AD 630. This difference of roughly one hour as compared with uncorrected calculations is obviously more critical when considering eclipses low down on the horizon. If the solar eclipse of AD 632, January 27 is calculated with ΔT = 0, the eclipse would begin at 08.18h at an altitude of 20 degrees, reach a magnitude of 0.85 at 09.58h and altitude of 35 degrees and end at 11.30h at an altitude of 46 degrees. This would mean that the eclipse would not have been recognised as happening in the early morning as described in the ḥadīṯ texts.

[253] In modern Arabic the root *k s f* is usually understood to denote a solar eclipse while *ḫ s f* is reserved for lunar eclipses. In the period we are considering, this does not seem to have been the case, with both roots being used for one eclipse.

[254] The table provides information about the percentage of the Sun's disk covered by the eclipse (magnitude where + signifies that the eclipse was to the top of the Sun's disk and - to the bottom and a magnitude greater than 1 denotes a total eclipse). Time - measured in decimal hours - and altitudes - measured in degrees - are provided for first and last contact with the Moon (beginning and end of the eclipse), in columns 1 and 3, and for the maximum magnitude in column 2. In the case of eclipses occurring during sunrise or sunset, the time is given for solar altitude 0. Duration gives the time during which the eclipse would have been visible.

Thus the eclipse of AD 632 January 27 reached a magnitude of 0.82 at Madīna. It began at 6.6h. (about 6h.36) just after sunrise at an altitude of 1°, reached maximum phase at 7.8h. (7h.48) at an altitude of 16° and ended at 9.3h (9h.18) at an altitude of 32°. The eclipse lasted 2.7h. or 2 hours and 42 minutes.

[255] These dates cover the period between the generally accepted date of the beginning of Muḥammad's ministry up to the time he left Makka for Madīna and the time there up until his death. The eclipse of AD

solar eclipses could have been seen at these locations. The importance of this situation will become apparent should "historical facts" not fit any of the calculated eclipse data, as the validity of the "historical material" would then have to be questioned either with regard to the date or with regard to the event.[256] Given the importance of the calculations of eclipse visibility, we have to dwell briefly on the factors which have been introduced into the equations in order to produce them.

Makka	21°.43N	39°.82E							
Julian Date	Type	Mag.	Alt. 1	Time 1	Alt. 2	Time 2	Alt. 3	Time 3	Duration
612/08/02	P. solar	-0.81	03	18.2	00	18.5	--	--	0.3
613/07/23	P. solar	-0.93	16	06.7	32	07.8	50	09.2	2.5
616/05/21	P. solar	+0.80	20	07.0	37	08.2	57	09.7	2.7
617/11/04	P. solar	+0.61	29	08.7	44	10.3	52	12.0	3.3
620/09/02	P. solar	-0.77	14	06.8	29	07.9	45	09.1	2.3
Madīna	24°.50N	39°.58E							
Julian Date	Type	Mag.	Alt. 1	Time 1	Alt. 2	Time 2	Alt. 3	Time 3	Duration
624/06/21	P. solar	-0.66	05	18.4	00	18.8	--	--	0.4
627/04/21	P. solar	-0.05	62	10.2	67	10.6	71	11.1	0.9
628/10/03	P. solar	-0.12	00	06.1	02	06.3	09	06.8	0.7
632/01/27	P. solar	-0.82	01	06.6	16	07.8	32	09.3	2.7
634/06/01	P. solar	0.86	21	17.1	07	18.1	--	--	2.0

Table 7. Solar Eclipses visible from Makka (AD 612-622) & Madīna (AD 622-634).

Geographical considerations

In calculations, the positions of Makka and Madīna have been taken as 21.43N, 39.82E and 24.50N, 39.58E respectively. Makka's relief is a problem, in that the town lies in the bottom of a valley and is surrounded by hills at different distances and of varying altitude. Given the size of Makka and the altitudes to be considered, any movement of the observation point would cause a considerable change of the horizon profile. Eclipse visibility within the town of Makka is going to vary greatly for points relatively close to each other, and even more so if considered for points on the surrounding hills. As we do not have exact information as to the whereabouts of observers, we are better served by calculations of a more general nature, in the knowledge that should the occasion arise, more detailed computations could be carried out.

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634 is included to show when the next possible eclipse following the Ibrāhīm eclipse, was well after the accepted dates for the death of Muḥammad.

256 See for example the account of the solar eclipse during the battle of Alhandic of AD 938 in J. A. Condé, *History of the Dominion of the Arabs in Spain*, trans. J. Foster (London: Bohn, 1854): I, 424: "The following day there was a fearful eclipse, which covered the light of the sun with a dark amber-coloured shadow in the middle of the day. The minds of the young and inexperienced, who had seen nothing similar in their lives, were much troubled by that event, and two days passed during which no movement was made by either the Christians or the Moslemah; ..." No solar eclipses were visible in Spain at this time; though there was one in July 939. The two events would seem to have been assimilated.

Madīna does not present such tortured relief, with a mean altitude of 600 metres and little in the way of horizon obstruction.[257]

The eclipse accounts which interest us here contain certain key words, or are built around some special event, which enables us to organise and compare them.[258] The most famous event is the death of Ibrāhīm, Muḥammad's son, supposedly marked by an eclipse,[259] but led to the famous reply, "The Sun and the Moon are not eclipsed for the life or death of a person."[260] Ibrāhīm's death, and the eclipse connected with it, will be one of our reference-points when considering other events and so will be studied first.

Summary Titles	Death	Cloak	Water	Last	Shoot	Riding	Toilet	Sign	Wrong	Heat
Sources										
Mālik	0	0	0	0	0	1	0	1	0	0
Ibn Ḥanbal	3	0	0	0	3	1	0	1	1	2
Al Dārimī	0	0	0	0	0	1	0	0	0	0
Buḫārī	4	1	0	0	0	2	0	2	0	0
Muslim	3	0	0	0	3	1	0	1	2	1
Abū Dāwūd	1	1	1	1	2	0	0	0	0	1
Ibn Māğa	0	1	0	0	0	0	0	0	0	0
al Nisā'ī	1	4	1	1	2	1	2	0	0	1
TOTALS	12	7	2	2	10	7	2	5	3	5

Table 8. Events connected to eclipse accounts.

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[257] The maps in Appendix V give some idea of the relative topography of Makka and Madīna.

[258] Table 8 gives a résumé of the different events and their distribution among the collections.

[259] Muḥammad's son by Māriya the Copt, he was supposedly born in Ḏū al Ḥiğğa AH 8 and died between Rabīʿ I and Šawwāl AH 10 (between 7 June AD 631 to 28 January AD 632), aged between sixteen and twenty-two months. See al Yaʿqūbī, *Taʾrīḫ*, ed. M. Th. Houtsma (Leiden: E.J. Brill, 1969) 2: 95f; this account also adds that the Sun was eclipsed for two hours on that day, Caetani, *Annali*, 311ff.

[260] Given the relative frequency of lunar eclipses as opposed to solar eclipses, it is worth noting that the only mention of the moon being eclipsed in the ḥadīṯ is to be found in the aforementioned phrase, denying that eclipses marked the birth or death of people.

Ibrāhīm's death[261]

The textual tradition surrounding Ibrāhīm's death is quite confused, with six different names being given as sources to the *isnād*. This does not by any means question the validity of the tradition - such a well-known event would surely be reported from different sources - but it does tend to confuse the issue. As can be seen from Table 9, there are four different traditions to be found in the "key words", the texts which talk of an eclipse "the day Ibrāhīm died", one text which is part of a sermon given by al Muġīra b. Šuʿba after he had led the eclipse prayer, and the tradition of the "dragged cloak" which comes in two different branches, one of which has the narrator with Muḥammad when the eclipse occurs. To these latter texts, we have to add other texts which talk of the "dragged cloak" but do not mention Ibrāhīm's death.[262] All the texts, bar one use the same root to describe the eclipse, *ksf* and there is a variant, in two of the texts, which for the end of the eclipse uses *ṭala ʿat* (rose, appeared), indicating, perhaps, an eclipse which ended soon after sunrise or at least during the morning. One weakness inherent to this textual tradition is that the beginning of the *isnād* is given as Ǧābir who has a certain reputation for fabricating ḥadīṯ.[263] A second problem lies in finding a solar eclipse which fits the generally accepted chronology of Ibrāhīm's death; however, four texts refer to the death without using the words, "on the day of Ibrāhīm's death", only one of which can definitely be said to have occurred as a completely separate incident. The others say that "a son of his, called Ibrāhīm, had died". This wording, if it refers to the same eclipse as would seem to be the case, counterbalances the aforementioned objections to linking Ibrāhīm's death with a solar eclipse and could well be the original tradition which at some later date was buried in the mass of other material which put the two events on the same day. From

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[261] Though the texts are obviously similar, there are relatively few which are, word for word, the same. A translation of one of the Ibrāhīm traditions (with a note of the variants) is given below.

"The Sun was eclipsed during Muḥammad's time ... on the day Ibrāhīm (the Prophet's ... son) died. The people said that it was eclipsed because of Ibrāhīm's (his son's) death. The Prophet ... stood and prayed six bowings with four prostrations... he took a long time in his prayer and the rows {of people praying} did the same (behind him, with him), then he stepped forward (and so did the people) (he stood in his place) and {the eclipse} had finished when his prayer had finished and the Sun had appeared and said: "Oh people the Sun and Moon are two signs among God's signs and they are not eclipsed for the death of a person, if you see anything like that, then pray till it is ended...."

The presentation of the accounts of events includes the vocabulary for the beginning of the eclipse, its end, words after the eclipse when they talk of eclipses (sermon), the isnād and key words.

[262] The texts in Table 10 should therefore be considered part of the textual tradition concerning Ibrāhīm's death.

[263] Ǧābir b. ʿAbd Allāh, see G. H. A. Juynboll, *Muslim tradition: Studies in chronology, provenance and authorship of early ḥadīth* (Cambridge: Cambridge University Press, 1983), 29.

the *silsila* attributed to Abū Bakara[264] we can conclude that the eclipse had to take place after the siege of Ṭā'if which probably took place at the beginning of AD 630.[265] Looking at the list of solar eclipses we are left with only one choice, the solar eclipse of AD 632/01/27 which began at about 06h.30 and ended at about 09h.20. At the maximum point of the eclipse 82% of the Sun's disc would have been obscured, making the event a noticeable one. As there are no other solar eclipses which could be the "Ibrāhīm eclipse", we have to conclude that the eclipse did not take place on the day of his death, but some time after.[266] Once this conclusion is reached, we are left with no definite date for Ibrāhīm's birth or death.

Sources	Eclipse	End	Sermon	Silsila	Key Words
Ibn Ḥanbal	kasafat	ṭala'at	lā yankasifān	Ğābir	The day Ibrāhīm died
Buḫārī	kasafat		lā yankasifān	al Muġīra b. Šu'ba	The day Ibrāhīm died
Buḫārī	inkasafat		lā yankasifān	al Muġīra b. Šu'ba	The day Ibrāhīm died
Buḫārī	inkasafat			al Muġīra b. Šu'ba	The day Ibrāhīm died
Muslim	inkasafat	āḍat	lā yankasifān	Ğābir	The day Ibrāhīm died
Muslim	inkasafat		lā yankasifān	al Muġīra b. Šu'ba	The day Ibrāhīm died
Muslim	inkasafat			Ismā'īl	The day Ibrāhīm died
Abū Dāwūd	kusifat	ṭala'at	lā yankasifān	Ğābir b. 'Abd Allāh	The day Ibrāhīm died
Ibn Ḥanbal	kasafat	taġallat	lā yankasifān	Ibn 'Amr	al Muġīra b. Šu'ba said
Ibn Ḥanbal	kasafat	ğuliya	lā yankasifān	Abū Bakara	His son Ibrāhīm had died Dragged his cloak in haste
Buḫārī	ḫasafat	inğalat	lā yankasifān	Abū Bakara	Son . . Ibrāhīm had died Dragged his cloak
al Nisā'ī	inkasafat	inkašafat	lā yaḫsifān	Abū Bakara	Son . . Ibrāhīm had died Dragged his cloak We were with the Prophet

Table 9. Death of Ibrāhīm.

Muḥammad drags his cloak[267]

As noted above, if the tradition attributed to Abū Bakara is to be accepted, then this version of the ḥadīṯ has to refer to the "Ibrāhīm eclipse". The texts which describe the event do not provide any

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[264] This was a freed slave who had fled from Ṭā'if at the time of the siege (c. AD 630) and had attached himself to Muḥammad. See Tabari, *Mohammed, sceau des prophètes*, 333.

[265] See Guillaume, *The life of Muhammad*, 597. Though sources such as this tell us that Muḥammad left Ṭā'if in Ḏū al Qa'da AH 8, the exact chronology of this period remains vague.

[266] This means that al Ya'qūbī, who dated the death as 29 Šawwāl AH 10, probably obtained the date from astronomical data rather than from historical sources. The most commonly quoted date for Ibrāhīm's death is Tuesday 10 Rabī' I AH 10, but the day and date do not correspond. According to Hāshim Amīr 'Alī, Appendix IV this date was Saturday 15 June AD 631, while calculation according to Ilyas - Appendix V- gives Sunday 16 June for 10 Rabī' I AH 10.

[267] Abū Dāwūd's text says "The sun was eclipsed (to the point that the stars appeared) during Muḥammad's time and he went out, alarmed - I was with him that day in Madīna - and he prayed two bowings with lengthy standing. He finished and the eclipse ended, then he preached ... "

other information which would either contradict this conclusion or help us to fix it in terms of the Hiğra calendar.

Sources	Eclipse	End	Sermon	Silsila	Key Words
Ibn Māğa	inkasafat		lā yankasifān	al Nu'mān b. Bašīr	Dragged his cloak
Ibn Ḥanbal	inkasafat	inğalat	lā yankasifān	al Nu'mān b. Bašīr	Dragged his cloak
Buḫārī	inkasafat	inğalat	lā yankasifān	Abū Bakara	Dragged his cloak
Abū Dāwūd	kasafat	inğalat		Qabīṣa al Hillālī	We were at the Prophet's Dragged his cloak I was with him (the stars appeared)[268]
al Nisā'ī	inkasafat	inğalat	lā yankasifān	Abū Bakara	Dragged his cloak We were at the Prophet's In haste[269]
al Nisā'ī	kasafat	inğilā'	lā yankasifān	Qabīṣa. . al Hillālī	Dragged his cloak We were with the Prophet
al Nisā'ī	kasafat	inğalat		Abū Bakara	Dragged his cloak Sitting with the Prophet

Table 10. Muḥammad dragged his cloak. No death.

The use of water[270]

Two other traditions deny that there are links between eclipses and people's lives. In the first, we have two texts which talk of people splashing water on themselves during the prayer. If the denial of any link between eclipses and events in people's lives is to be accepted as having been said on this occasion, then it must have occurred during the "Ibrāhīm eclipse", as there were no other solar eclipses between that one and Muḥammad's death in May or June AD 632. If we were inclined to give more credence to the description of the length of the prayer (*qiyāman šadīdan*), then we would have to consider a "post-Ibrāhīm" lunar eclipse, but calculations show that the last lunar eclipse visible in Madīna before Muḥammad's death was that of AD 630/03/04, some two years before the accepted date of Ibrāhīm's death.

Sources	Eclipse	End	Sermon	Silsila	Key Words
Abū Dāwūd	kusifat	tağallat	lā yankasifān	'Ā'iša	poured water over them
al Nisā'ī	kasafat	tağallat	lā yankasifān	'Ā'iša	poured water over them

Table 11. The use of water during the prayer emphasised

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[268] The stars would not have been visible during the Ibrāhīm eclipse.

[269] One other text from *Sunan al Nisā'ī*, "Kitāb al Kusūf," 145-6, has Muḥammad hurrying, but mentions neither the cloak, nor Ibrāhīm.

[270] Abū Dāwūd has the following text: "The sun was eclipsed during Muḥammad's life and the Prophet stood for a long time: he stood with the people, bowed then stood, bowed then stood then bowed... to the point that men fainted ... and water had to be poured on them. "

The Last Day[271]

The second example of reference to eclipses not being signs of births or deaths also suggests that Muḥammad thought it was the last day. The internal evidence of this tradition raises doubts to its validity, in that on the one hand, Muḥammad thought the eclipse was a sign of the last day, and on the other, denied any link between the eclipse and natural events.

Turning now to the other texts which do not mention the famous denial of links between eclipses and births or deaths, we could be forgiven for assuming that they chronicle events prior to Ibrāhīm's death; this does not seem to be the case.

Sources	Eclipse	End	Sermon	Silsila	Key Words
Buḫārī[272]	ḫasafat		lā takūn li mawt	Abū Mūsā	He though it was last day
Muslim	ḫasafat		lā takūn li mawt	Abū Mūsā	He though it was last day
al Nisā'ī	ḫasafat		lā takūn li mawt	Abū Mūsā	He though it was last day

Table 12. Muḥammad thought it was the last day.

Shooting[273]

Possibly the richest tradition with regards "astronomical" detail, is the shooting event. This is the account of how ʿAbd al Raḥmān b. Samura[274] was out shooting, either on his own or with companions, in the Madīna region when something happened to the Sun. He/they decided to see what Muḥammad's reaction was, and on returning to Madīna found him in prayer with the people. As can readily be ascertained from Table 13, the textual tradition can be split into two main families, based both on the *isnād* and the Key Words. The top of the table presents quite a homogenous appearance with the eclipse word being taken from the *ksf* root in all cases except one. The second group of texts offers more information, but also raises some questions.

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[271] Buḫārī's text says: "The sun was eclipsed and the Prophet got up worried that it might be the Last Day. He went to the mosque and prayed..."

[272] The Buḫārī and al Nisā'ī texts are identical.

[273] Ibn Ḥanbal has the following text: "While I (Samura b. Ǧundab) and some *Anṣār* friends were shooting our arrows during the life of Muḥammad, and the sun was two or three "lances" (see note 277 below) above the horizon when it blackened and became like the "*tanawwuma*" (see note 275 below). We said to each other "Let us go to the mosque and tell the Prophet about the appearance of the sun.." So we went to the mosque ... "

[274] Died in Kūfa in AD 678 or AD 680 and must have been quite young when the event occurred. See *E.I.*[2] s.v. ʿAbd al Raḥmān b. Samura.

Three of the texts use the term *iswaddat* (meaning darkened or blackened) instead of the usual terms for eclipse, which could suggest that the eclipse was only partial. This may seem a rather facile statement, in that we know that there were no total eclipses visible from Madīna during Muḥammad's life, but even the partial eclipses visible there would have caused hardly more than a slight darkening of the Sun which would have been more noticeable the closer the Sun was to the horizon, or in special climatic conditions such as a dust storm or haziness. The existence of virtually the same text introduced by *ṭala'at* (rose) raises the question of whether this event was indeed an eclipse. The description which likens the Sun to the *tanawwuma*[275] could suggest a planetary transit[276] or a sunspot. The former possibility has been excluded and the latter cannot be verified. The fact that the witness talks of the Sun after the event is probably because the event took place while the Sun was rising. The description of the Sun as being "about two or three lances (*rumḥayn aw ṭalāta*)[277] above the horizon and mentioning the end of the eclipse indicate an early morning eclipse with the Sun at an appreciable altitude above the horizon. The eclipse which best fits this scenario is the "Ibrāhīm" eclipse.

Four of the texts give details about how Muḥammad prayed, but cannot be taken as an accurate calculation of the duration of the eclipse/event and so are of little chronological value.

Moving on to another tradition, we find an account of an eclipse included in the story of a Jewess who talks to ʿĀ'iša about the "punishment of the grave". ʿĀ'iša then asks Muḥammad if there is any such thing and he says that there is. Some time after that, Muḥammad goes riding early and returns during the morning. There is an eclipse during which he sees a vision which he talks about when the prayer is over.

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[275] The *tanawwuma* is of the Trollius or Globe-flower family. A note in the Abū Dāwūd text describes it as a plant whose flower and fruit are speckled with black.

[276] Though visible to the naked eye, such events are difficult both to observe and identify in written accounts as noted by Bernard R. Goldstein, "Some Medieval Reports of Venus and Mercury Transits," in *Theory and Observation in Ancient and Medieval Astronomy*. London: Variorum Reprints, 1985, XV: 49-59. See also Jean Meeus, "The Transits of Venus," *J. Brit. Astron. Assoc.* 68 (1958): 98-108. The only planetary transit visible to the naked eye is that of Venus which occurs about once every 100 years. Meeus' calculations clearly demonstrate that this event could not have been a Venus transit. Chronologically, the two closest transits would have been AD 554 May 22 between 07h. 28 and 09h. 46 local time and AD 667 November 23-24 between 22h. 00 and 06h. 07, but this second transit would not have been visible in the region as the sun was below the horizon.

[277] E. W. Lane, *Arabic English lexicon* (London: 1863-93), s.v. *rmḥ*, gives *rāmiḥ* which has a value of between 4.5 and 9 degrees, which would here give us altitudes from between 9 and 13.5 (*rmḥ*=4.5) and up to 18 and 27 (*rmḥ*=9).

Sources	Eclipse	End	Sermon	Silsila	Key Words
Ibn Ḥanbal	kasafat	ḫusira ʿan		ʿAbd al Raḥmān b. Samura	Shooting my arrows
Muslim	kasafat	ḫusira ʿan		ʿAbd al Raḥmān b. Samura	Shooting arrows
Muslim	inkasafat	ğulliya ʿan		ʿAbd al Raḥmān b. Samura	Shooting arrows
Muslim	ḫasafat			ʿAbd al Raḥmān b. Samura	Shooting arrows
Abū Dāwūd	kasafat	ḫusira ʿan		ʿAbd al Raḥmān b. Samura	Shooting arrows
al Nisā'ī	inkasafat	ḫusira ʿan		ʿAbd al Raḥmān b. Samura	Shooting arrows
Ibn Ḥanbal[278]	iswaddat	tağallī		Samura b. Ğundab	Shooting at targets 2 or 3 lances above horizon Became like the tanawwuma
Ibn Ḥanbal	ṭalaʿat			Samura b. Ğundab	Shooting at targets 2 or 3 lances above horizon
Abū Dāwūd	iswaddat	tağallī		Samura b. Ğundab	Shooting at targets 2 or 3 lances above horizon
al Nisā'ī	iswaddat	tağallī		Samura b. Ğundab	Shooting at targets 2 or 3 lances above horizon

Table 13. Shooting when eclipse occurred.

Punishment of the grave[279]

Sources	Eclipse	End	Sermon	Silsila	Key Words
Mālik	ḫasafat			ʿĀ'iša	Between dawn and sunrise Returned during the morning Punishment of the grave
Ibn Ḥanbal	ḫasafat	tağallat		ʿĀ'iša	Punishment of the grave
Al Dārimī	ḫasafat	inğalat		ʿĀ'iša	Punishment of the grave
Buḫārī	kasafat			ʿĀ'iša	Between dawn and sunrise Returned during the morning Punishment of the grave
Buḫārī	ḫasafat			ʿĀ'iša	Between dawn and sunrise Returned during the morning Punishment of the grave
Muslim	ḫasafat	tağallat		ʿAmra[280]	Between dawn and sunrise Punishment of the grave
al Nisā'ī	inḫasafat	inğalat		ʿĀ'iša	Punishment of the grave

Table14. Punishment of the grave.

The textual tradition under consideration here is a complex one worthy of study in its own right, as the eclipse and the riding appear as insignificant details in the story. The very insignificance of the details, with regards the actual theme of the text is a strong indication of their validity. The time references *ḍāt al ġadāt* and *fa raǧaʿa ḍuḥan*,[281] found in three of the texts, are for the morning and give the impression that Muḥammad returned because of the eclipse.[282] This leaves us with a

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[278] This text and the Abū Dāwūd one below, are identical.

[279] The second of the Buḫārī texts states: "A Jewess came to ask ʿĀ'iša about something. She said to her, "May God give you refuge from the punishment of the grave!" So ʿĀ'iša asked God's Apostle, "Would the people be punished in their graves?" God's Apostle asked God's refuge from the punishment of the grave (= affirmative reply). Then one day God's Apostle rode off somewhere when the sun was eclipsed. He returned before noon, passed through the back of (his wives') dwellings and stood (in the mosque) for the prayer..."

[280] In all the other texts, ʿAmra is cited as reporting ʿĀ'iša words.

[281] See Kazimirski, s.v. *ġdw*, "Temps entre l'aube du jour et le lever du soleil." s.v. *ḍḥw*, "Heure du jour où le soleil est déjà élevé sur l'horizon"

[282] "He went riding early one morning, the Sun was eclipsed and he returned *ḍuḥan*..."

choice between the "Ibrāhīm eclipse" of AD 632/01/27 and that of AD 628/10/03, both of which are morning eclipses. Though it is impossible to state with certainty that this is another account of the "Ibrāhīm eclipse", it does seem more likely, given the larger magnitude and length of the event.

The toilet[283]

Another, very similar, tradition, is that of Muḥammad having gone to the toilet when an eclipse occurred.[284] We can immediately ask ourselves why this tradition is only to be found in the Sunan of al Nisā'ī, the collection chronologically furthest removed from events, as we can also remark on the similarity between this tradition and the previous one: the time given as *ḍaḥwa*,[285] the use of *ḫsf* to indicate the eclipse, ʿAmra in the *silsila* reporting ʿĀ'iša's words, and one of the texts mentioning the Jewess and the punishment of the grave. This tradition is possibly a variant of the previous one but the use of *ḍaḥwa* rather than *ḍuḥan* could well indicate a separate event which took place slightly earlier in the day. This possibility is strengthened when we realise that the two traditions cannot be easily reconciled.[286] Consultation of Table 7 reveals two remarkably similar solar eclipses, the "Ibrāhīm eclipse" which started with the Sun about one degree above the horizon and the earlier one of AD 628/10/03 which would have been visible as a cleft in the lower right-hand edge of the Sun as it rose above the horizon. Without being able to fix this event with certitude, there are three indications that it could well be the eclipse of AD 628/10/03: Firstly, ʿĀ'iša is quoted as the source in both of the preceding accounts, so that supposing the reports to be exact, the fact that she might well have given different times[287] for them is significant. Secondly, the prayer seems to have been said with only women present, which would again suggest that it was early and thirdly, in many countries it is customary for people to go to the toilet before sunrise or after sunset. There is another eclipse account in the body of ḥadīṯ literature which uses the term

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283 "The Prophet had gone out to the toilet, when the sun was eclipsed. We (ʿĀ'iša and the other wives?) went out and were joined by a group of women. God's Apostle came, it was morning, and stood for a long time... "

284 See Table 14.

285 Kazimirski, s.v. *ḍḥw*, "Heure de la matinée bientôt après le lever du soleil et avant l'heure *ḍuḥan*."

286 Muḥammad returning from a ride and going straight to prayer, as opposed to his having gone to the toilet.

287 See notes 281 and 285.

ḍaḥwa, but in this case the tradition refers to Muġīra b. Šuʿba leading the prayer.[288] If we accept that Muḥammad only prayed one eclipse prayer[289] we have to conclude that the eclipses described in the two traditions are one and the same, otherwise this tradition could be referring to the earlier eclipse of 3 October AD 628.

Sources	Eclipse	End	Sermon	Silsila	Key Words
al Nisā'ī	ḫusifat	tağallat		ʿĀ'iša	During the morning
al Nisā'ī	ḫasafat	tağallat		ʿĀ'iša	During the morning Punishment of the grave

Table 15. Muḥammad going to the toilet at the time of an eclipse.

A sign[290]

Turning to another tradition, we find Asmā' bint Abī Bakr going to ʿĀ'iša's house during an eclipse and asking if it was a sign (*Āya*). This event took place in Madīna.[291] A detail in the second text informs us that Asmā' was wrapped in one of Zubayr's (her husband) blankets (*qaṭīfa*), possibly because it was early morning and she was just waking up. The "*lā yaḫsifān*" from Ibn Ḥanbal's *Musnad* looks to be an addition to the original tradition, in a text which differs quite radically from the other four: other people talking of a sign and using water, as opposed to Asmā' asking ʿĀ'iša about a sign, and splashing water on her head or face. A look at the *isnād* confirms that there are two textual traditions, Ibn Ḥanbal gives from Asmā' to Muḥammad b. ʿIbād b. ʿAbd Allāh b. al Zubayr, while the others go to Fāṭima b. al Munḏir.

Sources	Eclipse	End	Sermon	Silsila	Key Words
Mālik[292]	ḫasafat			Asmā' b. Abī Bakr	Till I fainted . . poured water
Ibn Ḥanbal	ḫasafat	tağallat	lā yaḫsifān	Asmā' b. Abī Bakr	Wrapped in Z's blanket People splashing water
Buḫārī	ḫasafat			Asmā' b. Abī Bakr	Till I fainted . . poured water
Buḫārī	ḫasafat			Asmā' b. Abī Bakr	Till I fainted . . poured water
Muslim	ḫasafat	tağallat		Asmā'	Till I fainted . . poured water

Table 16. Eclipse account using the word "Sign = Āya".

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[288] See note 302 below.

[289] See Solar Eclipses 69 below.

[290] Ibn Ḥanbal's text says: "... from Asmā', daughter of Abū Bakr: the sun was eclipsed during Muḥammad's time. I heard the commotion made by the people saying that it was a sign and we were afraid. I went out wrapped in Zubayr's blanket and went to see ʿĀ'iša. When I entered, I found God's Apostle praying with the people. I asked ʿĀ'iša what was happening with the people and she pointed at the sky. I prayed with them. God's Apostle had completed the first prostemation and stood for such a long time that I saw some of the people who were praying splash themselves with water... "

[291] This can be deduced from the fact that Asmā' went to ʿĀ'iša, "Muḥammad's wife". Her marriage to Muḥammad was consummated in Madīna.

[292] This text and the two Buḫārī texts below, are identical.

The wrong garment[293]

Continuing with another event whose *isnād* goes back to Asmā', we find the story of the "wrong garment" in which she tells how Muḥammad mistakenly took a woman's garment instead of his cloak, on his way out to lead the eclipse prayer. In one variant, which has a different *isnād*, we find her going to the toilet before joining the crowds in prayer. This tradition seems to raise more questions than it answers! Why mention the fact that Muḥammad took the wrong garment and can we infer anything from this? Why include the detail of Asmā' having gone to the toilet? Is this account not just a variant of the previous tradition?[294] As there seems to be no logical reason for mentioning either the toilet or the wrong garment, we can argue for their authenticity. Both these incidents are compatible with an early morning event. As with ʿĀ'iša's accounts of events surrounding the two morning partial solar eclipses, we now have two other very similar stories which could refer to one or two events. Comparison of these two traditions with the "ʿĀ'iša" traditions show some interesting coincidences: both schools have someone going to the toilet and Muḥammad's use of a feminine garment would fit the scenario of his having gone to the toilet and being surprised by the eclipse. Though it would be difficult, if not impossible, to untangle the different elements of the stories, it does seem possible that Asmā' and ʿĀ'iša are reporting the same one or two events, namely the "Ibrāhīm" eclipse and that of AD 628/10/03.

Sources	Eclipse	End	Sermon	Silsila	Key Words
Ibn Ḥanbal	kasafat			Asmā' b. Abī Bakr	Took blouse. His cloak was brought
Muslim	(kasafat)			Asmā' b. Abī Bakr	Took blouse. His cloak was brought
Muslim	kasafat			Asmā' b. Abī Bakr	Took blouse. His cloak was brought I went to the toilet I wanted to sit down

Table 17. The Wrong Garment.

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[293] The longer of Muslim's texts says: "... from Asmā', daughter of Abū Bakr: the sun was eclipsed during the Prophet's time and he was excited (to the point that) he took a (woman's) blouse instead of his cloak which was brought to him later. I went to the toilet, then I came and entered the mosque and saw God's Prophet standing and so I too stood. He stood for such a long time that I found myself wanting to sit down..."

[294] In that one too, Asmā' arrives when the people are already praying.

A hot day[295]

A rather unusual tradition talks of an eclipse on a hot day and Muḥammad praying with his Companions who begin to collapse. The event's "uniformity" is marred by a mixture of eclipse words, there is no indication of location and Muḥammad prays with his Companions, whereas on other occasions we usually find him going to the mosque and/or praying with the people.[296] The fact that the text tells us that it was a very hot day does not help much, as the concept of heat is relative.

Sources	Eclipse	End	Sermon	Silsila	Key Words
Ibn Ḥanbal	ḫasafat			Ǧābir	Prayed with his Companions They began to collapse
Ibn Ḥanbal	ḫasafat			Ǧābir b. ʿAbd Allāh	Prayed with his Companions They began to collapse
Muslim	kasafat			Ǧābir b. ʿAbd Allāh	Prayed with his Companions They began to collapse
Abū Dāwūd	kusifat			Ǧābir	Prayed with his Companions They began to collapse
al Nisā'ī	kasafat			Ǧābir b. ʿAbd Allāh	Prayed with his Companions They began to collapse

Table 18. Eclipse on a hot day.

Muḥammad in Makka[297]

There is one tantalising tradition to be found in Sunan al Nisā'ī and attributed to ʿĀ'iša which states that Muḥammad prayed during an eclipse at the well of Zamzam. This statement is already remarkable, in that it does not say if it was the Sun or the Moon which was eclipsed. If this tradition is to be taken seriously, then we have to suppose that ʿĀ'iša is talking of something she witnessed otherwise we would expect the chain to say who told her of the event. As she was born in about AD 613, the eclipse would have to have occurred between about AD 618 - 632. Considering the period before the Hiǧra, there are numerous possibilities of both solar and lunar eclipses, and not enough information to indicate any one of them as the event. As for the post-Hiǧra possibilities, there are many more restraints. Muḥammad only went to Makka rarely during the ten or so years he lived in Madīna. The first occasion was for the lesser pilgrimage *ʿumra*

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[295] Muslim's version of this tradition: "The sun was eclipsed ... on a very hot day and God's Apostle prayed with his Companions: he stood for such a long time that they began to collapse..."

[296] Many texts mention specifically the mosque, Madīna, his wives' house (*al ḥuǧar*) which was attached to the mosque, or the place reserved for his prayer (*muṣallāhu*). Similarly, many texts mention the crowds gathering and praying with him. However, it has to be remembered that the title of Companion / *ṣaḥab* (see Glossary xx) was given to anyone who had met Muḥammad.

[297] "God's Apostle prayed, during an eclipse, at the well of Zamzam..."

which, following the accords of the treaty of Ḥudaybia, probably took place in February/March AD 629.[298] The next occasion was the capture of Makka to be dated in January AD 630 when he stayed 15 to 20 days, he then returned in February or March to accomplish another ʿumra in an overnight visit.[299] The last visit was for the farewell pilgrimage in March/April AD 632. The two ʿumra are the only two possible candidates for a match between a lunar eclipse and Muḥammad's presence in Makka, but there is no link made in tradition between an eclipse and one of the ʿumra. It would be remarkable if an eclipse had occurred during one of these visits to Makka, and even more remarkable that it received so little mention. The only conclusions we can draw from this text, are very tentative. It seems very unlikely that there was an eclipse during one of Muḥammad's post-Hiğra visits to Makka. With regards the eclipses which took place before the Hiğra, there is too little information available to allow us to opt for any of them. Lastly, there is another, remarkably similar tradition which talks of an eclipse prayer led by ʿAbd Allāh Ibn ʿAbbās[300] which could well be the origin of this tradition.

Others lead prayer

A last category of texts we have to take into consideration, are those which mention other people leading an eclipse prayer. In some cases it appears impossible to marry knowledge of their career to known eclipse phenomena, there are, however one or two notable exceptions, either when a place name has been included in a tradition, or when an exceptional eclipse occurred.

ʿAlī[301] moved to Kūfa in AD 657 and was assassinated there in AD 661. Table 20 shows the two possible eclipses for which he could have led the prayer. Both are partial, but quite low on the horizon and neither are very spectacular.

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298 The calculation of visibility of lunar eclipses does offer one possible partial lunar eclipse which took place in AD 628, 25 March from 17h.23 (at which time the Moon's altitude was -10.1°) to 19h.32 local time (altitude 18.7°), which means the moon rose partially eclipsed.

299 Not all Islamic authorities accept the historical validity of this ʿumra. See Tabari, *Mohammed, sceau des prophètes*, 326f.

300 See note 303 below for the text.

301 "The sun was eclipsed while ʿAlī was in Kūfa and he got up (and prayed) ..."

Al Muġīra b. Šu'ba, Abū 'Abd Allāh al Ṯaqafī,[302] became governor of Baṣra (30.30N 47.50E, founded in AD 638) under 'Umar, but was then dismissed for adultery. In AD 642 he became governor of Kūfa. Under 'Utmān he held no public office and under 'Alī he retired to Tā'if. In AD 661 he again became governor of Kūfa where he died between AD 668 - 671. The outstanding possibility for al Muġīra was the Total eclipse of AD 667/08/25 which reached totality about one hour after sunrise and this concords with the text which says that the eclipse occurred early in the morning.

Ibn 'Abbās, 'Abd Allāh[303] led the pilgrimage to Makka in June AD 656. After a short period as governor of Baṣra AD 657 - 659, he left for Makka, but was banished from there by 'Abd Allāh b. Zubayr when he proclaimed himself Caliph. In about AD 680, he returned briefly, at the time of the siege, after which he went to Mīna then Tā'if where he died. The tradition states quite clearly that the eclipse prayer was at the Well of Zamzam. The Annular eclipse of AD 671/12/07 would have been one of the most spectacular of the eclipses in the table and could well be the one referred to. As Table 20 shows, the Sun set before totality during the eclipse of AD 666/09/04.

Ḥuḏayfa b. al Yamān,[304] a Companion of Muḥammad who died in Kūfa in AD 657. The only real possibility for him was the eclipse of AD 644/11/05.

'Abd Allāh b. al Zubayr[305] son of Asmā', was in Madīna between AD 647 - 650 and AD 656 - 680 and in Makka, where he proclaimed himself Caliph, between AD 680 - 692.

'Abd Allāh b. 'Umar,[306] d. AD 693. It is difficult to locate this person with enough accuracy to allow calculating eclipses which he could have seen.

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[302] "The sun was eclipsed in the morning (*ḍaḥwa* see note 285 above) and Muġīra b. Šu'ba got up and prayed with the people..."

[303] "'Abd Allāh Ibn 'Abbās prayed with them at the Well of Zamzam... 'Alī b. 'Abd Allāh b. 'Abbās gathered (the crowds to pray) and Ibn 'Umar prayed (in the same way)." This text bears a remarkable resemblance to the previously quoted one, attributed to 'Ā'iša about Muḥammad having prayed at Zamzam, even to the detail of not mentioning the sun or the moon, but talking of the eclipse prayer.

[304] "Ḥuḏayfa b. al Yamān prayed during the eclipse..."

[305] "From al Zuhrī: I said to 'Urwa, "On the day that the sun was eclipsed in Madīna your brother ('Abd Allāh b. al Zubayr) only prayed two *rak'a* ..." ..."

[306] 'Abd Allāh b. 'Umar and 'Alī b. 'Abd Allāh b. 'Abbās are both said to have led the eclipse prayer, but their names are given without further detail at the end of the text referring to 'Abd Allāh Ibn 'Abbās having led the prayer at the Well of Zamzam (see note 303 above for the text).

ʿAlī b. ʿAbd Allāh b. ʿAbbās, b. AD 661, exiled by Walīd I (AD 710-715) to the province of Šarāt, he lived in Ḥumayma where he died in AD 735/6. During the period of exile, it is questionable whether any of this person's actions would have been noteworthy.

Name	Source	Eclipse	End	Place	Key Words
ʿAlī	Ibn Ḥanbal[307]	inkasafat			
ʿAlī	Ibn Ḥanbal	inkasafat			
ʿAlī	Ibn Ḥanbal	kusūf			
ʿAlī	Ibn Ḥanbal	inkasafat	inğaliya		
ʿAlī	Ibn Ḥanbal	inkasafat		al Kūfa	
ʿAlī	Ibn Ḥanbal	kasafat	inkasafat		
al Muġīra	Ibn Ḥanbal	kasafat	tağallat		During the morning It got darker
Ibn ʿAbbās	Ibn Ḥanbal	kasafat		Zamzam	
Ibn ʿAbbās	Buḫārī			Zamzam	
Ḥuḏayfa	Ibn Ḥanbal	al kusūf			
Ibn al Zubayr	Buḫārī	ḫasafat		al Madīna	
Ibn al Zubayr	Buḫārī			al Madīna	
Ibn ʿUmar	Buḫārī				
ʿAlī b. ʿAbbās	Buḫārī				

Table 19. Names of people alleged to have ied the eclipse prayer.

Date	Type	Person	Place	Mag.	Alt. 1	Time 1	Alt. 2	Time 2	Alt. 3	Time 3	Duration
638/03/21	P.S.	Muġira	Baṣra	-0.51	52	13.7	38	15.0	24	16.2	2.6
639/09/03	P.S.	Muġira	Baṣra	+0.34	32	08.2	44	09.2	55	10.2	2.0
644/11/05	A.S.	Ḥuḏayfa	Kūfa	+0.92	38	13.2	26	14.9	10	16.5	3.3
659/01/28	P.S.	ʿAlī	Kūfa	+0.39	15	16.0	04	16.9	00	17.3	1.3
659/01/28	P.S.	Ibn ʿAbbās	Makka	+0.14	20	16.0	12	16.6	05	17.1	1.1
660/07/13	P.S.	ʿAlī	Kūfa	-0.24	00	05.0	02	05.2	10	05.9	0.9
660/07/13	P.S.	Ibn ʿAbbās	Makka	-0.44	--	--	00	05.4	03	05.6	0.2
661/07/02	P.S.	Muġira	Kūfa	+0.18	18	06.5	27	07.2	36	07.9	1.2
665/04/21	P.S.	Muġira	Kūfa	+0.22	00	05.4	02	05.6	09	06.2	0.8
666/09/04	P.S.	Muġira	Kūfa	-0.83	04	17.9	--	--	00	18.8	0.9
666/09/04	T.S.	Ibn ʿAbbās	Makka	1.04	04	17.9	00	18.2	--	--	0.3
667/08/25	T.S.	Muġira	Kūfa	1.00	00	05.6	12	06.5	25	07.6	2.0
667/08/25	P.S.	Ibn ʿAbbās	Makka	+0.69	00	05.7	06	06.2	20	07.2	1.5
670/06/23	P.S.	Muġira	Kūfa	+0.84	--	--	00	04.9	07	05.5	0.6
671/12/07	P.S.	Muġira	Kūfa	-0.72	25	09.6	34	11.4	32	13.4	3.8
671/12/07	A.S.	Ibn ʿAbbās	Makka	0.92	27	09.0	43	10.8	43	13.0	4.0
674/10/05	P.S.	Ibn ʿAbbās	Makka	-0.30	25	08.0	36	08.8	47	09.7	1.7
678/01/28	P.S.	Ibn ʿAbbās	Makka	-0.35	39	14.3	29	15.2	19	16.1	1.8
678/07/24	P.S.	Ibn ʿAbbās	Makka	-0.76	87	11.9	64	13.8	42	15.4	3.5
679/07/13	P.S.	Ibn ʿAbbās	Makka	+0.22	28	16.5	18	17.2	09	17.9	1.4
686/02/28	P.S.	Ibn al Zubayr	Makka	-0.78	16	07.3	32	08.6	49	10.0	2.7
686/02/28	P.S.	Ibn ʿAbbās	Makka	-0.78	16	07.3	32	08.6	49	10.0	2.7
688/12/28	P.S.	Ibn al Zubayr	Makka	-0.55	09	16.6			00	17.4	0.8
692/04/22	P.S.	Ibn al Zubayr	Makka	-0.87	50	09.5	63	10.2	70	--	--

Table 20. Possible solar eclipses when prayer led by someone other than Muḥammad.[308]

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[307] All the Ibn Ḥanbal texts except the account of the prayer led by al Muġīra are from the marginal text.

[308] See note 254 for an explanation of the table.

Conclusion

Length of prayer

Sources	Cow	Āl ʿImrān	Yā Sīn	al Rūm	al Ḥağğ	al Ḥiğr	al Nağm	Long	al mubīn	Fātiḥa	Two
Mālik	1	0	0	0	0	0	0	0	0	0	0
Ibn Ḥanbal	0	0	4*	3*	1*	2*	1	1	1*	1	1
Buḫārī	2	0	0	0	0	0	0	0	0	0	0
Muslim	1	0	0	0	0	0	0	0	0	0	2
Abū Dāwūd	2	1	0	0	0	0	0	1	0	0	1
al Nisā'ī	2	0	0	0	0	0	0	0	0	0	0

Table 21. Sūras recited during the eclipse prayer[309]

A factor common in the majority of eclipse texts, is the emphasis put on how long the eclipse prayer was. These texts use various adjectives and often emphasise the effect by saying which Sūras were recited during the prayer. If we are to take these quotations as a serious estimate of the length of the eclipse prayer, they would usually refer to a lunar eclipse even though a solar eclipse, once noticed, could be followed for over an hour. On the other hand, there are many well-documented cases of medieval chronicles over-estimating the length of solar eclipses. As Sūras are often named in texts devoid of other historical detail, they are of little use to us here.

The most striking character of the above descriptions is their vagueness. Trying to take into account the description of the prayer said during any given event tends to confuse the issue rather than clarifying it, leading me to conclude that the prayer descriptions are the least reliable part of the accounts we have analysed.

Solar Eclipses

We began this study taking it for granted that the generally accepted distinction between *ḫsf* (lunar eclipse) and *ksf* (solar eclipse) does not hold true in the ḥadīṯ texts. Having studied the texts and the events they describe, it is clear that a case could be made, at least in some of the stories, for the eclipse to have been a late night lunar eclipse rather than an early morning solar eclipse. We have to ask, therefore, if there is any way that *ḫasafat al šams* (or any one of the variants used from either of the two roots *ḫsf* or *ksf*) could indicate a lunar eclipse. The simplest answer to this seems to lie with Muḥammad's famous rejection of any link between eclipses and natural events: *al šams wa al qamar lā yankasifān/yaḫsifān* ... which names both the Sun and the Moon with both of the roots and leads to the conclusion that none of the aforementioned texts refer to lunar eclipses. This

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[309] The texts marked with an asterisk are supposed to have been recited by ʿAlī during eclipses.

leads to another question: Why, if Muḥammad denied any link between lunar eclipses and natural events, are there no examples of this much more common phenomenon cited in ḥadīṯ literature?[310]

All the events we have identified could refer to the two partial solar eclipses of AD 628/10/03 and AD 632/01/27, which occurred while Muḥammad was in Madīna.[311] But the ḥadīṯ contain one more piece of evidence, in the form of a commentary on the text found in Sunan al Nisā'ī, and attributed to ʿĀ'iša, which claims that Muḥammad prayed the eclipse prayer at Makka, or to be more precise, at the Well of Zamzam. Ğalāl al Dīn al Suyūṭī states quite clearly that, "without any doubt, God's Apostle only prayed the eclipse (prayer) once, in the mosque in Madīna...". If this is indeed the case, then we have to conclude that all the texts refer to the eclipse of AD 632/01/27 which occurred some time after the death of Ibrāhīm.

We have been unable to identify any pre-Hiğra eclipses, even though the solar eclipses visible in Makka were generally more striking than those visible while Muḥammad was in Madīna. Ḥadīṯ literature contains examples of other "astronomical" events[312] which took place in Makka so there is no reason for them not to have been included.

From an astronomical point of view, some of the texts show an amazingly accurate description of the known event[313] which has to be the strongest argument for their authenticity. Despite our inability, at this point, to integrate either of these eclipses more accurately into the chronology of Muḥammad's life, we have discovered that reliable information is available in the ḥadīṯ. It is also clear that it would be difficult for all the differing accounts of Muḥammad's actions to be

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[310] Though we could mention the more spectacular aspect of solar eclipses compared to the often innocuous appearance of lunar eclipses, the question remains, especially when we take into account how small some of the partial solar eclipses were and the ease with which one can observe even the smaller lunar eclipses. We also have one reference in the marginal text of the *Musnad* of Ibn Ḥanbal, 3:320 which tells us that Muḥammad would "hurry to the mosque to pray on windy nights until the wind died down. Or if a celestial event such as an eclipse of the Sun or the Moon occurred, he would hurry to the place of prayer".

[311] The other two partial eclipses were even less likely to have been seen: in AD 624/06/21 the eclipse was to the lower edge of the Sun which was setting, while in AD 627/04/21 the combination of altitude and the small percentage of the Sun eclipsed made it almost impossible to see.

[312] The most noted being the shooting stars and the splitting of the Moon.

[313] The ability to calculate eclipses to the degree of accuracy necessary to differentiate between, for example, those of AD 628 and AD 632, is relatively recent and precludes the possibility of the stories about them being based upon "later" astronomical calculations. We may regret that there were two rather similar partial solar eclipses which could fit the descriptions, as this makes it more difficult to obtain a chronological fix, but this does not invalidate the argument that some of them are too accurate to be pure fabrication.

reconciled into one coherent account and so, we have to conclude that they are not all of equal historical value.

Shooting stars

There are several texts in the corpus of ḥadīṯ which talk of meteors or shooting stars.[314]

As Table 22 shows, there are three distinct traditions, though the *isnād* for two of these traditions goes back to one person, Ibn ʿAbbās. The second tradition shown in the table does not even refer to Muḥammad other than indirectly. Of the other two, the first sounds like a meteor, but we have little means of identifying it. We also find with this tradition the same negation about any connection between meteors and the birth or death of a person as we do with the eclipse alleged to have taken place on the day of Ibrāhīm's death. It is possible that any extraordinary celestial happening was considered by people of the *ğāhilīya* as being the sign of the birth or death of someone important.

The third event is more difficult to decipher. We are told how the spirits used to have a place in the heavens, from where they could hear God's teaching and that they used to add falsehoods to the teaching when repeating it. When Muḥammad received his mission, the spirits no longer had access to their place in the heavens. The tradition says that shooting stars did not fall before this occasion, a statement which is difficult to accept, coming as it does from a people who lived close to the desert and must have witnessed many shooting stars. This leads to two possible conclusions: that the image of the shooting star is allegorical, or that there was an extraordinary display of shooting stars, a storm of shooting stars. Both these possibilities have to remain hypothetical, as we have no independent records to either confirm or disprove them.[315] As the story of the expulsion of the spirits from the heavens is also said to have happened at Muḥammad's birth,[316] we have to ask if this was indeed a historical event.

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[314] "*Rumiya bi nağam*" or "*Rumiya bi kawkab*" are common terms. See:
Muslim, *Saḥiḥ*, "Kitāb al Salām," 4: 1750-1751.
al Tirmiḏī, *Ğāmiʿ*, "Kitāb tafsīr al Qurʾān," 8: 357; 9: 63.
Ibn Ḥanbal, *Musnad*, 1: 218, 274, 323; 5: 299.

[315] If, however, we refer to the Table of observed meteor showers, Table 4, 38, there are no recorded sightings against which we can confirm or deny the phenomenon. Nor can we offer a better date.

[316] See below, CHAPTER SEVEN : Birth to Hiğra, 92ff.

Sources	Event	End	Silsila	Key Words
Ibn Ḥanbal	rumiya bi nağmin ʿaẓīm	fastanār	Ibn ʿAbbās	Sitting with companions
Ibn Ḥanbal	rumiya bi nağmin		Ibn ʿAbbās	Sitting with companions
Muslim	rumiya bi nağmin	fastanār	Ibn ʿAbbās	Sitting with companions... (meteors) do not appear because of the death or the birth of someone
Tirmiḏī	rumiya bi nağmin	fastanār	Ibn ʿAbbās	Sitting with companions... (meteors) do not appear because of the death or the birth of someone
Ibn Ḥanbal	kawkaban inqaḍḍa		Muḥammad	Sitting at our house... NOT the Prophet
Muslim	kawkaban inqaḍḍa	bāriḥa	Ḥusayn b. ʿAbd al Raḥmān	NOT the Prophet
Ibn Ḥanbal	kānat al nuğūm lā yurmā [sic][317] bihā qabla ḏālika	rumiya bi šihāb	Ibn ʿAbbās	The spirits used to listen to Revelation... When the Prophet was sent a spirit could not go to its place without being thrown down by a meteor.
Ibn Ḥanbal	kānat al nuğūm lā tuğrā wa kānat al šayāṭīn la turmā	ğā'ahu šihāb	Ibn ʿAbbās	The šayāṭīn had places in heaven ... they used to listen to Revelation... When the Prophet was sent a šayṭān could not go to its place
Tirmiḏī	kānat al nuğūm lā turmā		Ibn ʿAbbās	The spirits used to listen to Revelation... When the Prophet was sent a spirit could not go to their places...

Table 22. Meteors and shooting stars.

Splitting the moon[318]

As stated previously, this event was miraculous, a sign shown to some of the people. As such, it cannot be used to offer chronological data.

Sources	Event	End	Silsila	Key Words
Ibn Ḥanbal	Inšiqāq al qamar		Anas b. Mālik	They saw the moon twice split in Makka ...
Ibn Ḥanbal	fa inšaqqa al qamar		Anas	The moon twice split in Makka ...
Muslim	Inšaqqa al qamar		ʿAbd Allāh	The moon split during the life of the Prophet of God and he said, "Believe!"
Muslim	Iḏā infalaqa al qamar filqatayn		Ibn Masʿūd	The moon split into two parts: one went behind the mountain and one did not.., the Prophet of God and he said, "Believe!"
Muslim	Inšaqqa al qamar		Ibn Masʿūd	The moon split during the life of the Prophet of God and the mountain hid one part and the other was over the mountain. The Prophet of God said, "By God, Believe!"
Muslim	Fa arāhum inšiqāq al		Anas	He showed them the splitting of

[317] Should read *turmā*.

[318] In the Qur'ān, the splitting of the moon is one of the signs of the end of the World (see 54:1). Not all the references to this are given as there is no scientific way of confirming the event and as such, does not further the study. For the alleged witnesses this was a sign which confirmed Muḥammad's authority and mission.

Sources	Event	End	Silsila	Key Words
	qamar			the moon twice
Tirmiḏī	Infalaqa al qamar		Ibn ʿUmar	The moon split during the life of the Prophet of God and he said, "Believe!"
Tirmiḏī	fa inšaqqa al qamar	ḥattā ṣāra firqatayn	Abū Ǧubayr	The moon split into two parts: one over this mountain and one over that mountain
Tirmiḏī	fa inšaqqa al qamar		Ibn Masʿūd[319] Ibn ʿUmar	The moon split during the life of the Prophet of God and he said, "Believe!"
Tirmiḏī	fa inšaqqa al qamar		Ibn Masʿūd	The moon split into two parts: one went behind the mountain and one did not...

Table 23. Splitting the Moon.

Yawm ʿĀšūrā'

Much is made in different accounts, of the possibility that Muḥammad reached Madīna on the Jewish feast of Yom Kippūr or Atonement. When we look at the corpus of ḥadīṯ, we find statements such as "Yawm ʿĀšūrā', was a day of fast for the Prophet of God/Qurayš in the times of the ǧāhilīya... ", "Fast on ʿĀšūrā'", and the discussion about whether Muḥammad arrived in Madīna on the Feast of Atonement or not could blind us to the fact that Yawm ʿAšūrā' was a feast in the times of the ǧāhilīya. Al Bīrūnī tells us that, "The 10th (of Muḥarram) is called ʿĀshūrā, a most distinguished day. The Prophet is reported to have said: "O ye men, hasten to do good works on this day, for it is a grand and blessed day, on which God had mercy on Adam." ... "Some people say that ʿĀshūrā is an Arabized Hebrew word, viz. ʿĀshūr, *i.e.* the 10th of the Jewish month Tishrī, in which falls the Kippūr fast; that the date of this fast was compared with the months of the Arabs and that it was fixed on the 10th day of their first month, because the Jews fast on the 10th day of their first month."[320]

Conclusion

The study of astronomical events mentioned in the corpus of ḥadīṯ has shown that some of the accounts compare favourably with astronomical data or calculations, which leads to the conclusion that ḥadīṯ material can neither be taken as a chronicle of historical events, nor can it be rejected out of hand as containing no genuine historical material. The problem will always lie in attempting to identify the genuine accounts from those which are either complete fabrications or heavily edited versions of an authentic core. These conclusions have been reached without studying the

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[319] Two texts containing the same material but with a different chain of transmission.

[320] Bīrūnī, *Chronology of Ancient Nations*, 326-327.

chain of transmission, the traditional way of judging the authenticity of individual ḥadīṯ. Though the study of the *isnād* could help better discern areas of concern, it has to be remembered that proving a chain is impossible, does not automatically mean that the body of the text does not contain valid historical material. Similarly, a valid *isnād* does not guarantee that information passed on in good faith, is correct.

CHAPTER FIVE : Hiğra to Death

As our interest lies specifically with the Hiğra calendar, and the most authoritative dates that we have concerning it and the events of Muḥammad's life, are the later ones, the logical way to approach the chronological question would seem to be to work backwards from the surer dates towards the less well documented ones even though this contradicts the usual order of a biographical study.

AH 11: Muḥammad's death

It is generally accepted that when Muḥammad fell ill, he delegated the responsibility for leading prayers to Abū Bakr.[321] On the day of his death, Muḥammad appeared one last time at morning prayers, thus leading the community to believe that the worst was over and that he was on the mend. Hours later Muḥammad died in ʿĀ'iša's house, and according to some traditions in her arms, at the age of 63.[322] His death took the community by surprise. The most commonly accepted date is Monday 12 Rabīʿ I AH 11.[323] He was buried on the Tuesday or Wednesday night.

There are many ḥadīṯ which attest to Muḥammad's being "born on a Monday, receiving his first revelation on a Monday, replacing the *Black Stone* in the corner of the Kaʿba on a Monday, fleeing Makka and arriving in Madīna on a Monday and dying on a Monday".[324] While accepting

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[321] Though others had led prayers when Muḥammad was absent from Madīna, this would seem to be the first time that anyone else led the prayers while he was present. There is much discussion among different Islamic schools as to the significance of Muḥammad's choice of Abū Bakr, but none question the fact that he was chosen. There is some discussion about how many times Abū Bakr actually led the prayers; 18 (3.5 days) or 15 (3 days).

[322] Other traditions give his age as 60 or 65. The question of Muḥammad's age can only be discussed at a later point.

[323] Other dates put forward are: Monday 13 Rabīʿ I (al Wāqidī), Monday 2 Rabīʿ I which was in the foreign month of March, in the conjunction of Scorpio (al Yaʿqubī, *Taʾrīḫ*, v.2, 126). Elias of Nisibis (AD 1018) gives the date of AH 11 2 days left in Şafar (see 1 *Eliae Metropolitae Nisibeni I: Opus chronologicum I.* Edited and translated by E. W. Brooks. Corpus Scriptorum Christianorum Orientalium, vol. 63, Scriptores Syri, t. 23, Louvain: Imprimerie Orientaliste, 1954, 63.) which according to traditional tables of concordance would be AD 632 May 25, Monday, or according to astronomical calculations, AD 632 May 24, Sunday, see Appendix V.

[324] Tabari, I, 1255-1256.

that it is possible that Muḥammad did die on a Monday, Caetani describes this tradition of the main events of Muḥammad's life happening on a Monday as a "fable".[325]

According to Caetani's concordance of dates, the Monday of his death fell on 13 Rabīʿ I AH 11 which was 8 June AD 632. Cattenoz gives the same concordance. Our calculations of visibility show that the beginning of the month should have been on 26 May AD 632[326] so that the concordance with a Monday would either fall on the 7 or the 14 Rabīʿ I[327] or if the 12 Rabīʿ I is preferred, then Muḥammad died on a Saturday.

The divergence of opinion about the exact date might be an indication that Caetani was correct in surmising that the most authentic tradition is the one that states that "Muḥammad died in Rabīʿ I".[328]

Regrettably, there are no contemporary datings of Muḥammad's death in a different calendar, which would allow us to control the concordance of dates.[329]

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325 "... tuto al più possiamo accettare che egli morisse un lunedi, benchè dobbiamo mettere tra le favole l'affermazione di ibn ʿAbbās, che Maometto nacesse un lunedi, venisse fatto profeta un lunedi, di lunedi alzasse la Pietra Nera, fugisse da Makkah, e arivasse a Madīnah, e di lunedi infine, cessasse di vivere." Caetani, *Annali dell'Islam,* 510.

326 It is worth repeating here that the Islamic calendar is based upon the sighting of the new crescent. The new month begins, therefore, on the evening of the sighting and days are counted from sunset to sunset. In order to avoid confusion, we have adopted the practice of naming the Julian date which corresponds the most to the Islamic one. In the above-mentioned concordance, this has to be read as, "... the beginning of the month would have been the evening of 25 May (after sunset) and 26 May (up to sunset) AD 632. It is also worth mentioning that if weather conditions were not good, the month could have begun on 27 May AD 632. Without detailed meteorological records, we cannot take weather into consideration except on a statistical basis. Nevertheless, we cannot simply ignore factors which we can neither control nor calculate on a computer. It is possible to use statistical data to approximate results, but these could never guarantee that the predictions are correct.

327 The New Moon occurred on AD 632/05/24 at 04h.37 and the New Crescent would have been visible on the evening of AD 632/05/25.

328 Caetani, *Annali dell'Islam*, 510.

329 Though Muḥammad's death is mentioned in non-Islamic chronological works, they are not contemporary. See for example in Michel le Syrien, *Chronique de Michel le Syrien, Patriarche jacobite d'Antioche (1166-1199)*, (Paris: Ernest Leroux, 1901): II, 417, where the death of Abū Bakr is mentioned, but over 500 years after the event.

H. Lammens,[330] concedes that "In the whole Sīra one piece of information seems acceptable: the ten years between the Hiğra and Muḥammad's death."[331] If we accept that Muḥammad died on 13 Rabīʿ I AH 11, (8 June AD 632 according to the author) - though even this has to be accepted with caution - then his arrival in Madīna has to be dated around AD 622. His theory, however, is that "without motive, the Prophet's life has been lengthened by ten years."[332] His argument for this is that the Sīra tells us that Muḥammad was surprised by death in his prime[333] and this is confirmed by the number of his contemporaries and seniors who are said to have lived to about the age of a hundred.[334] The author closes this argument with a tradition which has Muḥammad saying, "Each prophet begins his mission at half the age of his predecessor. At the beginning of his public life Jesus was forty. I received my mission when I was twenty." Lammens also points out that shortening Muḥammad's life by some ten years would make Bar Hebraeus'[335] dating of his birth in 892 of the Seleucid era, or AD 580 in the Julian calendar, correct. As none of these arguments quote events which can give us a chronological fix, the texts on which the author bases his reasoning, have to be treated with as much circumspection as those he criticises. Nevertheless, the possibility has to be taken seriously. [336]

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[330] Lammens, "L'Age de Mahomet," 209-250. Idem. "Qoran et tradition," *Recherches de Science Religieuse.* (1910): 5-29.

[331] "Dans toute la *Sīra* une seule donnée paraît acceptable: les dix années, coulées entre l'hégire et la mort de Mahomet." Ibid., 218.

[332] Lammens, "L'Age de Mahomet," 231.

[333] "He was well-built, in his prime and had few grey hairs and was referred to as young. In AH 4, on being turned down, having offered his hand in marriage to Umm Salama on the grounds of her age - she is supposed to have died in AH 59 at the age of 84, making her 29 at the time of the proposal - Muḥammad is supposed to have replied that he was about the same age." Ibid.

[334] Ibid., 231-5. The argument being that many needed to be old enough to witness to the miracles of Muḥammad's birth and yet died some years after him.

[335] Ibn al ʿIbrī Ġaġūrīyūs Abū al Faraǧ, better known as Bar Hebraeus, (1225-1286), Jacobite Archbishop of Aleppo whose *Chronography*, written in Syriac, gives details about the history of Islam which sometimes vary from the more generally accepted ones. See *E.I.*[2] s.v. "Ibn al-ʿIbrī".

[336] Another, less feasible, solution to the question of Muḥammad's age, is to be found in the *Chronicon Anonymum Pseudo Dionysianum*, 112. Written in 1086 of the Alexandrine era (AD 774-5) and AH 58, - see page 108 - the chronicle reports that, "In the year 938 of the Alexandrine era (AD 626-7), Muḥammad, the Arab's Caliph, or Prophet, died... ". The chronicle does not give a date of birth for Muḥammad, and it is difficult to explain how an error of four to five years could have crept into one of the most dependable dates available in the chronology of the early Islamic community. The credibility of this chronology has to be suspect, at least for this date. A previous report tells us that the Arabs took over Palestine up to the Euphrates in 932 of the Alexandrine era (AD 620-21), that Muḥammad became the first caliph and that he reigned for seven years, (p. 111-112). If this report is supposed to be about the Hiğra, it shows that the author's knowledge of events was, to say the least, vague. The same information is given in *Chronique de Denys de Tell-Mahré*, 4-5.

Conclusion

Difficult as it is to discern among the wealth of sources pertaining to the death of Muḥammad, the authentic historical information from the apocryphal, the conclusion of many researchers is that this date is the most reliable one that we have. Earlier dates were not only more difficult to fix because of the longer period between them and the definition of the Hiğra calendar, but could well have been further confused by attempts to find symmetries and signs in the life of Muḥammad which would prove or confirm his status as the Prophet.

AH 10

This year heralded two events which are important to our study, namely Ibrāhīm's death and the Farewell Pilgrimage, the former because of the tradition which links the baby's death to an eclipse while the latter is supposed to have been the occasion when Muḥammad reformed the calendar system.

The Farewell Pilgrimage

After the fall of Makka to the Muslims in AH 8, Muḥammad returned to Madīna and, on the occasion of the Pilgrimage of AH 9, sent Abū Bakr to lead it. He himself led the pilgrimage of AH 10. The story of this pilgrimage, and how Muḥammad went about accomplishing it is found in both ḥadīṯ and biographical literature. It is of great importance to Muslims because it became the model of the *Islamic* pilgrimage as opposed to the *Ğāhiliyya* pilgrimage.

The most common explanation given for Muḥammad not having led the pilgrimage of AH 9 is that, as the calendar system allowed intercalation, the Pilgrimage did not in fact fall in the month of Ḏū al Ḥiğğa but in the month of Ḏū al Qa'da. At the end of AH 9 there was an intercalation of one month which brought the cycle of intercalary months to completion, so that the Pilgrimage of AH 10 fell in Ḏū al Ḥiğğa.

As alluring as this theory may be, none of the sources provide any clear proof that the calendar was an intercalary one, or if it was, that the calendar had reached the end of a cycle.[337] That Muḥammad pronounced the words of Qur'ān 9:36-37,[338] condemning the intercalary system,

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[337] The most exhaustive study of Muḥammad's teaching during this pilgrimage is to be found in Blachère, "L'allocution de Mohamet lors du Pélerinage d'Adieu," 223-249.

[338] See above, Al Nasī', p. 48 for more detail.

during the Farewell Pilgrimage does not necessarily mean that these verses were revealed to him at that time. On the other hand, all Qur'ānic exegetes, Muslim and non-Muslim, agree that this Sūra was one of the last to be revealed.[339] This being the case, it would seem more difficult to explain the import of the revelation if the intercalary system had been abandoned years before, or had never existed. The condemnation of the intercalary practice could eventually have been directed against the Jewish calendar, but the context does not indicate this, or the term *nasī'* has been completely misinterpreted.

Ibrāhīm's death

As we saw in the study of the ḥadīṯ texts which link Ibrāhīm's death with a partial solar eclipse,[340] the textual tradition surrounding this event is confused. Though the link between the two events does seem to be strong one, there is no solar eclipse which fits the generally accepted chronology of Ibrāhīm's death, and there are also other texts which refer to his death and the eclipse without using the words, "on the day of Ibrāhīm's death". The study of the ḥadīṯ which mention a solar eclipse, point to the one which took place in AD 632/01/27, began at about 06h.30 and ended at about 09h.20.[341]

Tradition dates Ibrāhīm's death by his age, which is given as between sixteen and twenty-two months old when he died.[342] Working from a date of birth around Ḏū al Ḥiğğa AH 8 we obtain the following dates of death according to the calendar used and the supposed age at death:

Calendar	Sixteen months	Twenty-two months
Lunar	631/07/07	631/12/30[343]
Luni-solar	631/06/07	631/12/01

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[339] Nöldeke and the official Egyptian text rank Sūra 9 113th in order of revelation. Muir and Grimme rank it 114th. See Watt, *Introduction to the Qur'an*, 206-207.

[340] See Ibrāhīm's death, page 56.

[341] The fact that Abū Maʿšar identifies this eclipse with Muḥammad's death rather than Ibrāhīm's, could also be taken as an indication that Muḥammad's son did not die on the day of the eclipse. See note 176.

[342] Sixteen and twenty-two months are usually quoted. As a tradition has Muḥammad saying that his son would complete his nursing in Paradise, and the Qurān states that "mothers should breast-feed their children for two years" (2:233), the age of something between sixteen and twenty-two months could well be correct. It seems impossible to give a more exact estimate. Vacca, "Le preghiere dei Musulmani durante le eclissi," 5, gives his date of death as 10 Rabīʿ I AH 10 at the age of 8 months which corresponds to 16 June AD 631. There was no solar eclipse visible in Madīna on this date.

[343] This date would take us into the lunar month during which the solar eclipse took place, leaving us, once again with the dilemma of deciding if it is the product of hindsight chronology.

Ibrāhīm probably died some five months before the solar eclipse. We cannot, therefore fix the date of his death with any greater precision.

AH 8

Ibrāhīm's birth

Once we reach the conclusion that we are unable to fix a date for Ibrāhīm's death, we are left with very little to go on with which to fix a date of birth. An age is often suggested, and the most common date given for his birth is Ḏū al Ḥiğğa, AH 8, based upon the accounts that Muḥammad had just returned from the raid on Ṭā'if when he was born.[344]

The uncertainty about dating Ibrāhīm's death, grows as we try to date his birth. There are some who would go so far as to doubt the very existence of Māriya al Qibṭiya and therefore of Ibrāhīm.[345] The very grounds upon which we base the analysis that there is not enough evidence to pin-point the date of death are equally valid in the argument that there is not sufficient evidence to question the existence of Ibrāhīm and his mother.

AH 5

Though this year was known as the Year of the Earthquake, there is no evidence in ḥadīṯ literature and I have not been able to find any reports in contemporary chronicles which will allow us to either identify or date an earthquake.[346]

AH 4

Lunar eclipse AH 4

Manuscript no. 213 from the supplément des manuscrits arabes de la Bibliothèque impériale de Paris, 2nd last page of the volume: called *Ǧam'a al 'Idda* which states that "a lunar eclipse

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[344] The date for Muhammad's return was given as the end of Ḏū al Qa'da - one source says 24th - or the beginning of Ḏū al Ḥiğğa. Guillaume, *The Life of Muhammad*, 597 & note 853.

[345] Kaj Öhrnberg, "Māriya al-Qibṭiyya Unveiled," *Studia Orientalia* 55 (1984): 297-303. In this article, the author compares the story of Māriya and her sister Šīrīn to a tradition in the Shāh-nāma which tells the story of Maria, the daughter of the Emperor Maurice who was married to the Sasanian ruler Khusraw Parvīz (AD 590-628) who later married his first love Shīrīn. The latter, according to the story, later poisoned Maria.

[346] See above, CHAPTER FOUR : Ḥadīṯ, 50. Local chronicles identify an earthquake prior to AD 567/10/05, See *Chronique de Michel le Syrien*, 2: 284.

occurred in Ğumādā II in the year AH 4, which must have been that of 20 November AD 625 which corresponds with 14 Gumādā II."[347]

Vacca, reports of a tradition which has the first lunar eclipse of the Hiğra dated as AH 5, Ğumādā II, which would require a lunar eclipse to fall in October-November AD 626. As there was no eclipse visible - though there was an eclipse on November 9 - during that period, she concludes that the eclipse must have occurred in AH 4, Ğumādā II, as there was an eclipse, on AD 625 November 20, which fits.[348]

According to the lunar calendar, the eclipse would need to fall between AD 625/06/12 and AD 626/05/31: According to the table of lunar eclipses, if the lunar calendar was in use, there were two possible eclipse sightings: a total eclipse on AD 625 November 20, or a partial eclipse (93%) on AD 626 May 17. As a tradition mentions Ğumādā II as being the month, it would then seem that the eclipse in question was the former of the two. According to the luni-solar calendar, there is the possibility of sighting two total eclipses, the first on AD 625 May 27 and the second the above-mentioned total eclipse of November AD 625 November 20. Referring to the mention of Ğumādā II, we would need an eclipse which occured between AD 625/08/11 and AD 625/09/08, which is not the case. Once again, a tradition provides us with information which we are unable to confirm from independent sources.

AH 3

Sarīya Marṭad b. Abī Marṭad[349]

This is the account of how a group from the tribes of ʿAḍl and al Qāra went to Muḥammad and asked him to send some of his companions to teach their people about Islam "in Ṣafar, 36 months after Muḥammad's exodus".[350] Six Muslims were sent to the tribes but were betrayed by those who had asked for them; their real reason being to sell them to the Qurayš in Makka. A fight ensued

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[347] The question remains whether this text is another example of hindsight chronology or not.

[348] Vacca, "Le preghiere dei Musulmani durante le eclissi," 5.

[349] Ibn Saʿd, *Ṭabaqāt*, II: 39-40.

[350] Ibid., 40. As with all other occasions when events are dated counting the number of months since the Hiğra, the month of arrival is included in the total. If the authors have worked out the month from the number given in a tradition, they could not be sure that the original number did include the month of his arrival.

during which three of the Muslims were killed and the other three surrendered their arms and had their hands bound. One of the three captives managed to free his hands and escape but was followed and killed. The remaining two were sold as captives in Makka to the sons of men they had killed at Uḥud. The author continues: "They imprisoned them until the sacred months had ended, then took them out to Tanʿīm and killed them".[351]

This text raises some questions about the calendar which need to be examined as the only reason why the text would state that the prisoners were held "*until the sacred months had ended*" would be that they were captured or sold to the Makkans during the sacred months - when killing was forbidden - rather than in Ṣafar which would mean that they would have had to be held for a year before they could be killed. This argument is all the more powerful as the detail about holding the prisoners until the sacred months were over adds nothing to the story, thus lessening the likelihood that it is a later embellishment. Broadly speaking, there are five possible explanations:

1 The most obvious is that the event took place in Ṣafar counting the number of months since the Hiğra, that is from Rabīʿ I. The problem with this interpretation, is that it does not present any logical reason why the prisoners should have been held for a full year afterwards. The only conclusion from this scenario would be that the capture took place in Šawwāl, but the event is dated from the death of the two prisoners in Ṣafar.

Rabīʿ I	1	13	25
Rabīʿ II	2	14	26
Ğumādā I	3	15	27
Ğumādā II	4	16	28
Rağab	5	17	29
Šaʿbān	6	18	30
Ramaḍān	7	19	31
Šawwāl	8	20	32
Ḏū al Qaʿda	9	21	33
Ḏū al Ḥiğğa	10	22	34
Muḥarram	11	23	35
Ṣafar	12	24	36

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[351] "faḥabasūhumā hattā ḫarağat al ašhur al ḥurum ṯumma aḫrağūhumā ilā al tanʿīm fa qatalūhumā..." Ibid. *al ašhur al ḥurum* "the sacred months" is written in the plural which only leaves the choice of the three months of Ḏū al Qaʿda, Ḏū al Ḥiğğa and Muḥarram.

2 The request to Muḥammad was made during one of the sacred months, but as the killing took place in Ṣafar the event is remembered and dated Ṣafar. If this is the case, then the event teaches us nothing about the calendar. This theory is unlikely, because the capture and killing of the Muslims would have taken place during a sacred month which would have been worthy of comment.

3 In calculating the number of months after which the request was made to Muḥammad, the calculation was made according to the official Hiğra calendar which began in Muḥarram, rather than from the month of Rabīʿ I, when Muḥammad allegedly arrived in Madīna. This would allow us to calculate the number of months as follows:

Muḥarram	1	13	25
Ṣafar	2	14	26
Rabīʿ I	3	15	27
Rabīʿ II	4	16	28
Ğumādā I	5	17	29
Ğumādā II	6	18	30
Raǧab	7	19	31
Šaʿbān	8	20	32
Ramaḍān	9	21	33
Šawwāl	10	22	34
Ḏū al Qaʿda	11	23	35
Ḏū al Ḥiǧǧa	12	24	36

This would mean that, once again, the Muslims were captured during a sacred month, which, in itself would have been worthy of mention, but also the number of sacred months that the Makkans had to wait before killing the captives would have been one or two, which are written differently in Arabic.[352] As there is no valid reason for supposing that the "formal" calendar was used, without indications that it was used elsewhere, coupled with the problems of vocabulary, this argument has to be rejected.

4 The request to Muḥammad was made during the thirty sixth month after Muḥammad's arrival which was one of the sacred months. The prisoners were held till the end of the sacred months and then killed in

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[352] The Arabic noun has three forms, the singular, the dual (for two) and the plural for more than two. In the text, the plural form is used.

Ṣafar. This can only be explained by accepting that intercalary months were in use, but were not known to the author:

Rabīʿ I	1	14	26
Rabīʿ II	2	15	27
Ǧumādā I	3	16	28
Ǧumādā II	4	17	29
Rağab	5	18	30
Šaʿbān	6	19	31
Ramaḍān	7	20	32
Šawwāl	8	21	33
Ḏū al Qaʿda	9	22	34
Ḏū al Ḥiğğa	10	23	35
Nāsī'	11		36
Muḥarram	12	24	
Ṣafar	13	25	

Here again, we face the problem of the vocabulary, with only one sacred month to go, the plural would not have been used. This solution would have been a neat one, as the kidnapping would have taken place during an intercalary month, which was not sacred. No matter how alluring this possibility may be, the theory has to be rejected.

5 The number of months and/or the month name have been added to the tradition by an earlier author. If this is the case, then all that the story can teach us is what that particular author's idea of the calendar was. The killings most probably took place in Ṣafar, and if the absence of any mention of a kidnapping during the sacred months is to be taken as seriously as I believe it should be, then the kidnapping took place in Šawwāl. The number of months remains an enigma.

The dating of events by counting months since Muḥammad's arrival in Madīna could well represent an older tradition than the one which gives Hiğra dates. How early and how reliable it is needs to be investigated. On the face of it, though, we have here an indication that intercalary months were not used during those months, or if they were, the author has ignored them in dating this event.

AH 2

Sarīya Qatl Ka'b b. al Ašraf

The expedition to kill the Jew Ka'b b. al Ašraf who wrote satirical poems against Muḥammad is dated in the same month in both Ibn Sa'd and Ṭabarī.[353]

Ġazwat al Sawīq

This is the story of an attack by Abū Sufyān, supposedly against Muḥammad, but in 'reality' against a farmer and a casual labourer. When the Muslims heard of this, Muḥammad led a raiding party, but Abū Sufyān escaped, with his party, leaving behind sacks of flour (Sawīq) in their haste. This is how the event came to be named "the flour raid". Sunday the fifth of Ḏū al Ḥiğğa,[354] 22 months after Muḥammad's exodus, is the date given by Ibn Sa'd.[355] On the other hand, Ṭabarī recounts the same event but has it beginning in Ḏū al Qa'da.[356] In the Ġazwat Buwāṭ, Ṭabarī places the incident one month later than Ibn Sa'd, while with this one he dates it one month earlier.

Given the paucity of references to the weekday upon which events happened, other than for significant events in the life of Muḥammad or famous battles, Sunday the fifth of Ḏū al Ḥiğğa deserves further investigation. If there had been an intercalary month at the end of AH 1, then we could explain why Ṭabarī places this event in Ḏū al Qa'da. The fact that Ibn Sa'd, or his source gives Sunday when our calculations for the fifth of Ḏū al Ḥiğğa indicate a Monday, leads us tantalisingly close to a significant result, especially when tables of concordance give Tuesday the fifth of Ḏū al Ḥiğğa,[357] which means that later authors attempting to carry out some hindsight chronology calculating the day from tables would have been unlikely to have come up with Sunday. Here we have an indication that Ṭabarī, or his source, believed in the luni-solar calendar

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[353] With "... 14 nights gone in Rabī' I, 25 months after Muḥammad's exodus...," see Ibn Sa'd, *Ṭabaqāt*, II: 21-23, or, "...in the same month (Rabī' I)..." Ṭabarī, *Mohammed, sceau des prophètes*, 181-185.

[354] Ḏū al Ḥiğğa AH 2 began on Thursday 24 May 624, which would make the 5th of the month a Monday, rather than a Sunday.

[355] Ibn Sa'd, *Ṭabaqāt*, II: 20

[356] Ṭabarī, *Mohammed, sceau des prophètes,* 179-180.

[357] See Cattenoz, *Tables de Concordance des ères chrétienne et hégirienne.*

theory or that it was in use and Ibn Sa'd, or his source, corrected what was perceived as an error.[358]

Sarīya 'Abd Allāh b. Ğaḥš al Asadī at Naḫla[359]

'Abd Allāh b. Ğaḥš al Asadī is reported to have been sent out by Muḥammad in Rağab, 17 months after his exodus. During this raid people were killed and a lot of the account deals with the question of killing during the sacred month of Rağab when killing was forbidden. This text also illustrates another point of primary importance; namely that we cannot accept or reject the theory of intercalary months without examining other texts which are similarly dated to see if this interpretation of the calendar renders any of the accounts impossible.

In Ibn Sa'd's account we are told that "they were not sure if that day was in a sacred month or not",[360] while Ibn Ishāq gives a much more detailed account of how "the raiders took council among themselves, for this was the last day of Rajab, and they said, 'If you leave them alone tonight they will get into the sacred area and will be safe from you; and if you kill them, you will kill them in the sacred month,' so they hesitated and feared to attack them."[361] The Ibn Sa'd text leaves the possibility of interpreting it to mean that the action took place at the end of Ğumādā II with the doubt being whether the new month of Rağab had begun or not. Another question which the text raises, is why the raiders did not know whether the new month had begun, no matter which month it was; they were in the desert and would have been able to observe the new crescent! Once again we have to conclude that there is not enough evidence to indicate clearly for or against intercalary months.[362]

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[358] Counting 22 months in the luni-solar calendar, would give us the date of Tuesday 31 January AD 624. Once again the argument is only convincing if the day and date are not the product of hindsight chronology.

[359] Ibn Sa'd, *Ṭabaqāt*,, II: 5.

[360] "fa šakkū fī ḏālika yawm ahuwa min šahr al ḥarām am lā," Ibid. This argument is difficult to accept and seems more like a later attempt to cover the embarrassment of accepting that Muḥammad could have condoned or even organised a raid to take place during one of the sacred months.

[361] Guillaume, *The life of Muhammad*, 287.

[362] The most interesting aspect of this account is that the difference between the two versions is the difference between the two calendars. Neither version contains any information which indicates that one theory is better than the other.

Ġazwat Buwāṭ

This campaign, an attempted attack on a Makkan caravan, is said to have happened in Rabīʿ I, 13 months after Muḥammad's exodus,[363] yet, according to Ṭabarī,[364] the expedition only left Madīna in Rabīʿ II. Though this does not prove anything about the calendar, it does indicate possible uncertainties.

Conclusion

In the Sarīya Marṭad b. Abū Marṭad and the Ġazwat al Sawīq events, we found two potentially fruitful sources. Analysis of the details contained in the accounts can lead to different hypotheses about what calendar was in use at the time. The absence of independent records of the events means that the historian is obliged to accept the possibility that the traditions have been reworked at different times, by different authors. On one level, this is altogether natural and any author using other sources reworks them to a certain extent, on the other, we have the much more problematic question of whether the original traditions contained all of the chronological details that we find in the texts, in their present form, or whether the authors found the month name and added the number of months or on the contrary, if they found a tradition with the number of months and worked out the month name. In either case, reworking texts can mask their original form and mislead subsequent research. When interesting texts are found, all possible interpretations have to be explored.

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[363] Ibn Saʿd, *Ṭabaqāt*, II: 3-4

[364] Ṭabarī, *Mohammed, sceau des prophètes*, 128.

CHAPTER SIX : The Hiğra

Events leading to the Hiğra

As Muḥammad gained followers in Makka, pressures upon him, and those who believed in him, grew taking the form of accusations of madness, possession and public insults. Despite the problems which the early community faced, new members joined them regularly. During the pilgrimage of AD 620 six members of the Ḫazrağ tribe converted to Islam and probably during the pilgrimage of the following year twelve members of the Ḫazrağ and Awş tribes from Madīna joined the believers. At al Aqaba,[365] the new believers swore an oath when Muḥammad said, "I invite you to protect me from that which you protect your women and children."[366] The usual interpretation of this first oath is that the new believers were not committed to fighting for Islam. They returned to *Yaṯrib* with Muṣʿab b. ʿUmayr b. Hāšim b. ʿAbdu Manāf who was to teach them Islam and instruct them in their new religion. During the pilgrimage of AD 622 some seventy Madīnans were in Makka and reswore their allegiance to Muḥammad.[367]

Shortly after this, Muḥammad ordered the Makkan believers to leave for Madīna and they became the first *Muhāğirūn*[368] or emigrants leaving in different groups.

Muḥammad stayed in Makka with Abū Bakr and ʿAlī. According to the traditions, the Qurayš devised a plan to arm young men from the different clans who would go and kill Muḥammad, thus spreading the blood responsibility among them all. The angel Gabriel warned Muḥammad not to sleep in his bed, so ʿAlī slept in the bed, wrapped in Muḥammad's cloak while Muḥammad, miraculously, left the house. The Hiğra had begun.

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[365] The first of two meetings known as al ʿAqaba one and two.

[366] The account given in Gaudefroy-Demombynes, *Mahomet*, 105, confounds the two encounters of ʿAqaba, as well as translating "nisā'akum wa abnā'akum" (your women and children), "vos femmes et vos filles", (your women and daughters). At the first meeting of al ʿAqaba the new believers swear the Women's Oath, referring to the Qur'ānic text: "O Prophet, if female believers come to offer you an oath that they will take no gods but God, that they will not steal, commit adultery or kill their children, that they will not bring forth slander that they have devised between their hands and their feet, and will not disobey you in what is right, then accept their oath and ask God's forgiveness for them. God is Forgiving and Merciful." (60:12).

[367] See Gaudefroy-Demombynes, *Mahomet*, 104-105 and Guillaume, *The Life of Muhammad*, 198-199. This was the second al ʿAqaba.

[368] In contrast to the term *Muhāğirūn*, the Madīnan believers were known as *Anṣār* or helpers.

The Hiğra

The privilege of sharing the Hiğra with Muḥammad went to Abū Bakr to whose house Muḥammad went upon leaving ʿAlī. From there, the two men went and hid in a cave for a few days before making the trip to Madīna.

There are long and detailed studies of Muḥammad's itinerary. Our main concern here is the tradition that he arrived at Qubā' at noon on Monday 12 Rabīʿ I AH 1.[369] It is not clear where this tradition had its origins; was it an independent account passed down through a line of reputable witnesses, or is it the result of early historians attempting to calculate the date, working back from later, more reliably dated events such as Muḥammad's death? The answer would seem to be that we just do not know.

Yawm ʿĀšūrā'

One set of traditions related to the Hiğra, suggests that the day of Muḥammad's arrival in Madīna coincided with the Jewish feast of Atonement, or *Yawm ʿĀšūrā'*;[370] while another supposes that the feast fell in Muḥarram AH 2: "The Prophet had arrived in Madīna in the month of Rabīʿ I. In the month of Muḥarram[371] of the following year, he noticed that the Jews celebrated a fast on the tenth of the month, and called this day ʿĀšūrā'. The Prophet asked them why they marked this day. They replied, 'It's the day when God made the Pharaoh drown in the sea[372] when he saved Moses who had fasted on that day in order to give thanks to God. Since then we too devote this day to fasting every year.' The Prophet ordered the Muslims to fast on that day as well saying: 'I am more worthy to follow the example of my brother Moses son of ʿAmrām.'"[373] Later that year he received the revelation which was to make Ramaḍān the Muslim month of fasting.

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[369] According to the tables in Appendix IV, 12 Rabīʿ I was Thursday 23 September AD 622, in the lunar calendar. In the luni-solar calendar, 12 Rabīʿ I was Saturday 29 May AD 622 Other traditions also mention a Thursday or 18 Rabīʿ I. See Gaudefroy-Demombynes, *Mahomet*, 108.

[370] "The Day of Atonement, *Yom Kippūr* in Hebrew, was a day of complete rest, penance and fasting (celebrated on 10 Tishri). Described in the Book of Leviticus, 16: 1-34, 23: 26-32 and the Book of Numbers 29: 7-11. The day was celebrated in expiation for the sins of the people.

[371] The month begins on 5 July AD 623 and ends on 3 August AD 623, and the feast of ABH, the fifth month of the Jewish calendar, fell on 12 July AD 623, while the feast of the Passover fell on 22 March 623. See Burnaby, *Elements of the Jewish and Muhammadan Calendars*. This mixed information about a Jewish feast would seem to indicate that there was some connection with one of them, but it is not too clear which one.

[372] This description is for the Feast of the Passover, rather than the Feast of Atonement.

[373] See Ṭabarī, *Mohammed, sceau des prophètes*, 133.

What can be said on the subject of Yawm ʿĀšūrā', is that it fell on Monday 20 September AD 622[374] which means that if Muḥammad arrived in Madīna on Monday 20 September AD 622 - which according to our calculations was Monday 09 Rabīʿ I AH 1 - then he arrived on Yawm ʿĀšūrā'. If the second tradition were to be taken seriously, then Muḥarram would have to fall in September, which is not the case. However, as stated previously, there could have been confusion about which Jewish feast fell in Muḥarram.

Mahmoud Effendi quotes from *Murūğ al ḏahab* -which states that, between the Yazdagird and Hiğra eras there are 3624 days- as well as from Manuscript 1131 from the Bibliothèque Nationale [375] but offers no independent evidence to support either of these theories, leaving us to conclude that this is probably another case of hindsight chronology.

Conclusion

The Hiğra was an important date in the history of the Islamic community and it is only natural that Muslims seek to define it. Not only was this one of the defining events of the early Islamic community - reason enough for studying it in detail - but also the defining point of the Hiğra calendar.[376]

The starting point for research can have been either Muḥammad's death, or a tradition about a Jewish feast. As we saw above, there are two traditions about Muḥammad's reaction to a Jewish feast, both of which have to be studied in the light of the different calendar theories. At present, the concordance of Muḥammad's arrival in Madīna with Yawm ʿĀšūrā' fits the accepted chronology, but we have seen that the traditions mix up the Jewish feasts. None of the accounts of Muḥammad's arrival in Madīna seem to mention the feast. Those traditions which do talk of the coincidence, are independent of the main accounts of the arrival. This could possibly be a sign that, once again, we are dealing with hindsight chronology. Conversely, a tradition of Muḥammad

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[374] See APPENDIX II : The Jewish Calendar, 114ff.

[375] "Between the first day of the year, marked by the Sun's presence in the first minute of Aries, of the religious conjunction and the first day of the Higra, there are 51 Persian years, 4 months, 3 days {he corrects the 3 days to 8} and 16 hours." Effendi, "Mémoire sur le calendrier arabe avant l'Islam," 1: 109-192; 2: 116-132.

[376] Though, by definition, the Hiğra calendar begins on 01 Muḥarram of the year during which Muḥammad arrived in Madīna, if the arrival is defined according to the luni-solar or lunar calendar, we will obtain different results.

arriving in Madīna on the day of a Jewish feast - named or not - could have led early historians to use hindsight chronology in order to find the date of his arrival!

CHAPTER SEVEN : Birth to Hiğra

The First Revelation

The first Revelation received by Muḥammad was obviously an event which changed his life radically. It is probably equally correct to say that, for the historian, this event is a watershed: anything prior to it sinking into the haze of obscurity whereas once Muḥammad started sharing the Revelation that he had received, so he became better known and there is more likelihood that things that happened to him, or that he did, would be recorded or remembered.

Tradition has it that the first Revelation was received on the 14th or the 17th night of Ramaḍān, when Muḥammad was forty years old.[377] Another tradition has it that this revelation was received on a Monday. According to Lammens,[378] much of the argument on how long Muḥammad lived in Makka before he received the revelation, is based upon a verse from the Qur'ān: "Before it (Revelation), I lived among you for an ʿumur."[379] Lammens insists, rightly, that ʿumur cannot simply be taken to mean 40 years, as some authors claim, given that in the Qur'ān the word means "life", "existence" or "generation"[380] and so the verse should be translated, "Before it, I lived among you for a long time."

There is little in the way of detailed historical material to discuss for most of the events prior to the Hiğra, with the notable exception of Muḥammad's birth. Unless fresh evidence comes to light, these will always be the obscure years: his childhood, the caravans he travelled on, his marriage, the reconstruction of the Kaʿba... Numerous biographies enumerate events from this period of Muḥammad's life, some in great detail. Despite the fact that this period might be obscure, from the historian's point of view, there are no grounds for questioning the main facts presented in biographies, even if historical evidence would be difficult to find.

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[377] There are, however, other traditions which suggest that Muḥammad was forty-three when he received the first revelation. Muḥammad b. Ğarīr even mentions one which claims that Muḥammad was twenty when he received it. See Ṭabarī, *Mohammed, sceau des prophètes,* 65.

[378] Lammens, "L'Age de Mahomet," 209-250.

[379] Qur'ān 10:16 "fa qad labi'tu fīkum ʿumuran min qablihi".

[380] See Qur'ān 10:16, 16:70, 21:44, 22:5, 26:18, 28:45, 35:11,

Muḥammad's birth and the year of the Elephant

As the traditions surrounding Muḥammad's birth are so tightly linked with the story of Abraha's unsuccessful attempt to conquer Makka, we need to study the chronology of the latter.

The events leading up to the Year of the Elephant could be said to have started with the coming to power of Ḏū Nuwās,[381] a Jewish South Arabian leader who tried to impose his religion on his subjects.[382] This led to the persecution and massacres of Nağrān, and the Ethiopian invasion to save the Christians. The invasion was ordered by the Negus Cosmos[383] and led by Aryāṭ,[384] who had an assistant named Abraha. Once Ethiopian rule had been established, Abraha seized power from Aryāṭ and managed to obtain recognition from the Negus.[385] Abraha built a cathedral in Ṣanʿā' which he wished to make into an important place of pilgrimage. When the cathedral was defiled, Abraha vowed to set out and destroy the shrine at Makka. Abraha's army advanced on Ṭā'if, sweeping away any attempts at resistance, in Ṭā'if he was persuaded not to destroy the shrine of al Lāt. He then advanced on Muġammis, some two miles outside of Makka, where he met ʿAbd al Muṭṭalib, Muḥammad's grandfather, who warned him that the Kaʿba was under divine protection.[386] On the day of the attack, Abraha's elephant would not go any further towards Makka. Abraha's army was then attacked by birds which carried small stones. Anyone who was hit

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381 Also called Dimnos and Tmhh in *Chronicon Anonymum Pseudo Dionysium*, 40, 46.

382 See: *E.I.*^{2} *s.v.* "Abraha", and Guillaume, *The life of Muhammad*, 14-28.

383 Other sources name the Negus Kāleb Ella Aṣbeḥa and have two Ethiopian raids: the first in about AD 523, during which Ḏū Nuwās escaped and took refuge in the mountains. Following the withdrawal of the Ethiopian army, and taking advantage of the winter which protected him from the arrival of another Ethiopian intervention, Ḏū Nuwās organised large scale persecutions in Zafār, Mārib, Ḥaḍramawt and, of course, Nağrān. These persecutions led to a second intervention by the Ethiopian army in AD 525 during which Ḏū Nuwās was killed. See Jacques Ryckmans, *L'institution monarchique en Arabie méridionale avant l'Islam* (Louvain: Université de Louvain, 1951), 322-4. According to another text, the Negus was called Andoug and became a Christian after successfully beating the Jewish King Dimnos in a raid preceding the persecutions of Nağrān. In a second raid after Nağrān, he replaced the leader Tmhh by Abraha. *Chronicon Anonymum Pseudo Dionysium*, 40-51. Manuscript 727 of the Qarawīyūn Library at Fez, which contains parts of Ibn Isḥāq's lectures, tells us that the Negus was called Maṣḥama which means ʿAtīya in Arabic. See Guillaume, "New Light on the Life of Muhammad," 46.

384 Ibn Isḥāq contains a tradition which names the commander of the Abyssinian forces Rūzbah, Guillaume, "The Life of Muhammad," 13.

385 Here too the versions differ and the king who replaced Ḏū Nuwās, called Esimphaios by Procopius is, in all probability the Sumyafaʿ Ašwaʿ known from South Arabian inscription RES 3904, and reigned with two co-regents until about AD 535. Procopius, *History of the Wars*, I: 189 again informs us that he was king when the emperor Justinien sent an ambassador to Ella Aṣbeḥa in AD 531. Ibid., 193.

386 In Manuscript 727 of the Qarawīyūn Mosque's library we find that, "The night before the attack on Mecca the very stars appeared to warn the invaders of approaching punishment." Guillaume, "New Light on the Life of Muhammad," 14.

by a stone was either killed or wounded. As Abraha retreated, his fingers fell off, and when he died his heart burst from his body. Some deserters, and camp followers stayed on in Makka.

Arab sources inform us that Abraha was succeeded by two of his sons, namely Yaksum and Masrūq before South Arabia was occupied by the Persians in about AD 575.[387]

South Arabian sources

Trimingham,[388] says of Abraha: "that he did send such an expedition against the tribal protectors of Mecca seems confirmed in his inscription discovered at Murayġān (Ry 506) and dated 662 of the Sabean era, which is equivalent to AD 547,[389] but a more pragmatic view has to be that there is a gap of some twenty three years between the last known inscription which names Abraha and the attack on Makka as dated by traditional chronology. Conti Rossini points out that Arab sources differ greatly on the dating of this event and that an elephant would not have been able to survive in the conditions prevailing in the area. Instead, he suggests that tradition has mistaken the name of an earlier Ethiopian king, Afilas, for *al-fīl*, thus creating the story of the elephant.[390] Conrad[391] is much more positive about linking the tradition of the attack on Makka with the Murayġān inscription, arguing that the inscription mentions a place called Turaba which is located only 100 kilometres east of Ṭā'if, the event took place in 662 of the Ḥimyarite era, which gives a date between AD 547 and AD 552, depending upon which theory for the beginning of the era one ascribes to, and certainly no later than the date of the death of al Munḏir (AD 554) who is mentioned in the inscription. Furthermore, the dating of this event in, or around, AD 552 confirms, in a general way, some earlier Arabic sources which do not link the event of the Year of the Elephant to Muḥammad's birth.[392]

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[387] Ibid. 325 and Caussin de Perceval, *Essai sur l'histoire des Arabes: avant l'Islamisme*, I: 145-6.

[388] J. Spencer Trimingham, *Christianity among the Arabs in Pre-Islamic Times* (London: Longman, 1979), 304-305.

[389] Trimingham then goes on to explain that the chronology of this expedition does not fit the traditionally accepted Islamic tradition which has Muḥammad born in the year of the expedition. He fixes the possible dates of the expedition as between AD 540 and 547. Ibid., 305. For the text of this inscription, see below, APPENDIX I, 108.

[390] Reported in Ryckmans, *L'institution monarchique*, 325.

[391] Lawrence I. Conrad, "Abraha and Muḥammad: Some observations apropos of chronology and literary *topoi* in the early Arabic historical tradition," *BSOAS* 50 (1987): 227-228.

[392] See also the following section on Arabic Sources.

If the inscription of Murayġān is rejected as being the source or inspiration for the tradition of the Year of the Elephant, the preceding debate has achieved little more than establishing that independent South Arabian sources confirm the historical existence of Abraha. Though the evidence may only be circumstantial, the possibility of linking the tradition and the inscription deserves serious consideration. This is all the more important given the absence of any independent evidence for other campaigns led by Abraha in the immediate region. Conrad even suggests that the absence of later inscriptions detailing Abraha's activities also fits the traditions that Abraha died soon after returning from the expedition.[393]

If this inscription is accepted as being the source of the tradition concerning the Year of the Elephant, it places the attack around AD 547. An independent source informs us that Abraha reacted strongly to the expulsion of Theodose, the Patriarch of Alexandria, (AD 538).[394]

Arabic Sources

Tradition says that the expedition was undertaken as a reprisal for the "assassination of one of Abraha's Hijazi allies, and that it was encumbered with a number of elephants..."[395] The death of Muḥammad b. Ḫuzāʿī and his brother Qays' call to Abraha for revenge, is recorded in Arabic sources. These sources continue with an account of the abortive raid on Makka[396] which resembles that of the Qur'ān in Sūrat al Fīl. J. Ryckmans concludes, "that the expedition mentioned in Ry 506 has nothing to do, unless later reworked by tradition, with the expedition attributed to Abraha against Makka in about AD 570."

Some Arabic sources do not link the Year of the Elephant with the year in which Muḥammad was born. "... Afterwards they dated from the death of Kaʿb ben Lu'ayy till the *Year of Treason*, in which the Banū-Yarbūʿ stole certain garments which some of the kings of Ḥimyar sent to the

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393 Conrad, "Abraha and Muḥammad," 228.

394 *Chronicon Anonymum Pseudo Dionysianum*, 51. According to Tisserand and Weitt, the Patriarch was reinstated after six months, but later exiled. Tisserand and Weitt. "La Liste des Patriarches d'Alexandrie," *Revue de l'Orient Chrétien* 23 (1922-3): 123-143.

395 Other events from Abraha's career are also reported to have taken place at about the same time: AD 542 suppression of a revolt led by Maʿadkarib Yaʿfur b. Sumyafaʿ Ašwaʿ, AD 543 assumption of a title of independence AD 543-546 expedition of the 'elephant' (See Ryckmans, *L'institution monarchique*, 324) and AD 544 expedition against Maʿadd and Abraha receives embassies, (see Sidney Smith, "Events in Arabia in the 6th Century AD," *Bulletin of the School of Oriental and African Studies* 16 (1954): 465).

396 Guillaume, *The life of Muhammad*, 22-27.

Ka'ba, and when a general fighting among the people occurred at the time of the holy pilgrimage. Thereupon they dated from the Year of Treason till the *Year of the Elephants*, in which the Lord, when the Ethiopians were coming on with the intention of destroying the Ka'ba, brought down the consequences of their cunning enterprise upon their own necks, and annihilated them. Thereupon they dated from the era of the Hijra... However, people say that between the year of the death of Ka'b ben Lu'ayy and the year of Treason there is an interval of 520 years, and between the year of Treason and the year of the Elephants an interval of 110 years. The Prophet was born 50 years after the invasion of the Ethiopians, and between his birth and the year of Alfijar there were 20 years.... Between the year of Alfijar and the reconstruction of the Ka'ba there are 15 years, and 5 years between the reconstruction of the Ka'ba and the time when Muḥammad was entrusted with his divine mission."[397]

Another tradition from al Zuhrī is recorded by al Zubayr b. Bakkār in his *Nasab Quraysˇ*, "... Ibn Šihāb : Quraysh counted before the chronology of the Prophet, from the time of the 'Elephant'. Between the elephant and the (battle of the) Fijār they counted 40 years. Between the Fijār and the death of Hishām b. al Mughīra they counted 6 years. Between the death of Hishām and the building of the Ka'ba they counted 9 years. Between the building of the Ka'ba and the departure of the prophet for al-Madīna they counted 15 years; he stayed 5 years (of these 15) not receiving the revelation..."[398] Simple arithmetic gives a total of 70 years between the Year of the Elephant and the Hiğra. Though the sources do not agree on how many years there were between the Year of the Elephant and Muhammad's birth, they do agree that it was not in the same year.

These are by no means the only sources to question this generally accepted theory. Hawting quotes al Fāsī as making the "point that some traditions actually have ʿAbd al-Muṭṭalib, before his discovery of Zamzam, on which occasion we are told that only one of his sons had been born, involved in the events of the Year of the Elephant. Since his son, ʿAbd Allāh, the father of the

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[397] al Bīrūnī, *The Chronology of Ancient Nations*, 39-40.

[398] M. J. Kister, "The Campaign of Hulubān: A New Light on the Expedition of Abraha," *Le Muséon* 78 (1965): 427-428.

Prophet, was the youngest of his ten sons, this hardly gives time for the Prophet to be born in the Year of the Elephant, as is often stated in the tradition."[399]

When looking for possible reasons why Islamic sources connected Muḥammad's birth and Abraha's attack on Makka, other than that they did happen in the same year, the possibility that the two events share a common denominator has to be considered.

Birds throwing stones [400]

The accounts of the expedition against Makka tell of the invaders being repulsed by a flight of 'mythical' birds which threw stones at the attackers killing them, or causing some sort of illness in their ranks.[401]

Rather than returning to the previous discussion, we may well do better to look at the result of the birds throwing stones at Abraha's army: illness of epidemic proportions which some equate with the first appearance of measles and smallpox and death. In ancient astrology, one of the signs of impending disaster and epidemics was the comet or shower of shooting stars.[402] It is just possible

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399 Gerald R. Hawting, "The 'Sacred Offices' of Mecca from Jahiliyya to Islam," *Jerusalem Studies in Arabic and Islam* 13, (1990): 62-84.

400 See the discussion about Abraha in the chapter on Qur'ānic texts, p.46, for a discussion of some of the details.

401 "In the morning Abraha prepared to enter the town and made his elephant ready for battle and drew up his troops. His intention was to destroy the temple and then return to the Yaman. When they made the elephant (its name was Maḥmūd) face Mecca, Nufayl b. Ḥabīb came up to his flank and taking hold of its ear said: 'Kneel, Maḥmūd, or go straight back whence you came, for you are in God's holy land!' He let go of its ear and the elephant knelt, and Nufayl made off at top speed for the top of the mountain. The troops beat the elephant to make it get up but it would not; they beat its head with iron bars; they stuck hooks into its underbelly and scarified it; but it would not get up. Then they made it face the Yaman and immediately it got up and started off. When they set it towards the north and the east it did likewise, but as soon as they directed it towards Mecca it knelt down."

"Then God sent them birds from the sea like swallows and starlings; each bird carried three stones, like peas and lentils, one in its beak and two between its claws. Everyone who was hit died, but not all were hit. They withdrew in flight by the way they came, crying out for Nufayl b. Ḥabīb to guide them on the way to the Yaman...."

"As they withdrew they were continually falling by the wayside dying miserably by every waterhole. Abraha was smitten in his body, and as they took him away his fingers fell off one by one. Where the fingers had been there arose an evil sore exuding pus and blood, so that when they brought him to Ṣan°ā' he was like a young fledgling. They allege that as he died his heart burst from his body...."

"Ya'qūb b. 'Utba told me that he was informed that that year was the first time that measles and smallpox had been seen in Arabia..." Guillaume, *The Life of Muhammad*, 26-27.

402 G. Furlani, "Astrologisches aus syrischen Handschriften," *Zeitschrift der Deutschen Morganländischen Gesellschaft* 75 (1921): 122-128, Idem. "Eine Sammlung astrologischer Abhandlungen in arabischer Sprache," *Zeitschrift für Assyriologie* 33 (1921): 157-168, J. J. Modi, "A Mahomedan view of comets," *Revue du Monde Musulman* 10 (1910): 1-46.

"Les étoiles chevelues (comètes) annoncent des mortalités, des guerres, la mort des rois... dix jours après l'entrée de la troupe des Arabes au pays des Romains. Durant toute la nuit, sur toute la sphère supérieure,

that the symbol of birds throwing stones which caused death and illness, refers to a memorable astronomical event.

Some reports of meteor showers have been recorded for the sixth and seventh centuries.[403] If the Murayġān inscription, which gives a date of April in the year 662 of the Sabean era,[404] is a serious option for either the raid on Makka or the tradition about it, then we would need a meteor shower sighting between AD 547 and AD 552[405] - there are in fact, two: AD 551 July 26, AD 551 August 01 - and a plague which corresponds to these dates.[406] The fact that we have a record of sightings of meteor showers and incidence of plague add a certain amount of credence to the linking of the tradition to the campaign described in the Murayġān inscription.

Link between Muḥammad's birth and Abraha's attack

So far, the only possible reason for linking the two events, is both tenuous and hypothetical: that both events were linked to a similar astronomical phenomenon. However, among the traditions relating the birth of Muḥammad, there is the account of the shooting stars or meteorites which announced his birth.[407] Looking to astronomical records, there are three possible events,[408] one of which occurs on 23 September 585 which was on a Sunday night, or by Arab computation a

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de l'ouest ... l'est, des flèches et des éclaires de feu en forme de lance, étaient lancés sans intéruption, nombruex et drus." F. Nau, "Un fragment Syriaque de l'ouvrage astrologique de Claude Ptolémée intitulé 'Le livre du fruit'," *Revue de l'Orient Chrétien* 28 (1929): 246-7.

Ibn Isḥāq also reports a tradition that, "the first Arabs to be [sic] afraid of falling stars when they were pelted with them were this clan of Thaqīf, and that they came to one of their tribesmen called ʿAmr b. Umayya, one of the B. ʿIlāj who was a most astute and shrewd man, and asked him if he had noticed this pelting with stars. He said: 'Yes, but wait, for if they are the well-known stars which guide travellers by land and sea, by which the seasons of summer and winter are known to help men in their daily life, which are being thrown, then by God! It means the end of the world and the destruction of all that is in it. But if they remain constant and other stars are being thrown, then it is for some purpose which God intends towards mankind.' ..." Guillaume, *The Life of Muhammad*, 91.

[403] Trimingham fixes the dates as AD 540-AD 547, see note 389, 94. There are no records of meteor showers for theses dates.

[404] See above, South Arabian sources, 94.

[405] See above, South Arabian sources, 94. As the South Arabian calendar started in April, either of the two showers could have been sighted during the raid.

[406] The chronicles for this period tell us of the plague of AD 546-7. See above Plagues, 41

[407] al Yaʿqūbī, *Taʾrīḫ Yaʿqūbī*, (Najaf: Al-Gherri Press, 1939), II: 4.

[408] See above,

Meteor Showers, p. 38, which contains no records of meteor showers for the traditionally accepted year of birth - AD 571 -, but lists three over a period of five years, some ten years later: AD 581 March 20, AD 585 September 23 and AD 586 June/July. Once again, it has to be noted that neither the existence of records of showers, nor their absence, can prove anything about Muḥammad, unless we can find a direct link between sources, or at the very least, records of sightings made much closer to Makka.

Monday, which also fits with another tradition, that Muḥammad was born on a Monday![409] In some sources, this event is interpreted as the ğīns (lesser devils) being expelled from the heavens.[410]

Dates

Al Sīra al Ḥalabiyya gives Muḥammad's date of birth as Monday 8, 10, 12 or 17 Rabīʿ I, in the Spring.[411] Another source talks of his childhood with his wet-nurse. The argument that he was dancing in the sun and that his wet nurse stopped him because of the heat, was an indication that this must have happened during one of the hottest months of the year seems rather feeble, given the generally high year-round temperatures of the Makka region. Another source gives a Monday in Rabīʿ I which was 20 April.[412] Al Masʿūdī says that, "Muhammad was born 50 days after the arrival of the Ethiopians at Makka, to which they had laid siege on Monday, 13 (days) left in Muharram 882 Seleucid, or 17 Muharram in the year 216 after the pilgrimage of betrayal, and during the fortieth year of the reign of Kasra Anoucherwan" but no argument is provided to show that this dating is not another case of hindsight chronology. Abū al Fidā' places the birth in year 881 of the Seleucid era, year 1316 of the Nabonassar era and the forty-second year of the reign of Kasra Anoucherwan, which would place it between 569 and 570, because of a contradiction between the Seleucid and Nabonassar dates.[413]

H. Lammens[414] quotes an anonymous résumé of the Sīra, as saying that Muḥammad was born in the Year of the Elephant, 50 days or two months after the departure of the elephant, or even 10, 15 or 20 years afterwards.[415] In a ḥadīṯ in which ʿUṯmān, Muḥammad's son-in-law, is asked about

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[409] See Effendi, "Mémoire sur le calendrier arabe avant l'Islam," 109-192.

[410] "When Muḥammad was born the devils were reviled and the planets fell..." al Yaʿqūbī, *Tārīḫ*, 5.

[411] See Effendi, "Mémoire sur le calendrier arabe avant l'Islam," 132-146.

[412] This method of arguing is quite common in theories put forward about the pre-Hiğra and early Hiğra chronology, where earlier sources are quoted without testing the validity of their claims. This could be termed "hindsight" chronology.

[413] Effendi rejects Abū al Fidā' s dating because of a contradiction between the Seleucid and Nabonassar dates. Effendi, "Mémoire sur le calendrier arabe avant l'Islam," 146.

[414] Lammens, "L'Age de Mahomet et la chronologie de la Sīra," 209-250.

[415] Anonymous manuscript number 5051, Paris Bibliothèque Nationale, 17b. Other sources mention 10 years. Conrad also supplies sources which mention a date of 15 years before the Year of the Elephant, or 30 and 70 years after it and yet another which has Muḥammad being born on "20 April in the seventeenth year of the reign of the just king Chosroes Anushirvan (i.e., A.D. 547), 578 years after Jesus son of Mary..." Conrad, "Abraha and Muḥammad," 234-235. The latter date taking us back to a possible link to the Murayġān inscription! Sprenger, A. "Uber den Kalender der Araber vor Mohammad," *Zeitschrift der*

their respective ages, ʿUṯmān replies, "The Prophet is greater than me, but I was born before him." In another source, we are told that ʿUṯmān was born in the year six of the Elephant[416] which could be another indication that Muḥammad was indeed born a number of years after the year of the Elephant.

The author also points to certain companions of the Prophet who are given very large life spans,[417] even though certain writers admit that "When I tried to work it out, I could not get past 80."[418] The explanation for this is often clear: according to Lammens, a witness such as Ḥassān Ibn Ṯābit needs to be that old in order to witness to the appearance of "Aḥmad's star"[419] which allegedly was a sign of the imminent birth of the Prophet, having reached the age of reason.[420]

Leaving aside the problems that making the Year of the Elephant up to 10, 15, 20 or even 50 years earlier than Muḥammad's birth may raise for South Arabian chronology, the sources mentioned above suggest a birth date for Muḥammad some time after AD 580 and a Year of the Elephant somewhere between AD 530 and AD 570.

Astrological sources

When considering astrology as a possible source of chronological data for Muḥammad's birth, there are two possible sources of information: there are calculations which plot the position of the planets at Muḥammad's birth,[421] there are also tables and calculations which look at the

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Deutschen Morganländischen Gesellschaft 13 (1859): 139, listed the variants he had found: 40, 45, 50 days, 1, 2 months, 10, 23, 30, 40, 70 years after the attack, 1, 17, 18, 21 Rabīʿ I, Ṣafar, Rabīʿ II. He even states that Muḥammad probably did not know his own date of birth. Ibid., 141-2.

416 Ibn Saʿd, *Ṭabaqāt*, VI: 65, 12; 130, 20.

417 Lammens, "L'Age de Mahomet," 213-214.

418 Ibn ʿAqilā, *ʿAnwān al saʿāda, Taʾrīḫ Makka.*

419 Any attempt at linking this star to known observations of astronomical events such as comets leaves us with too many choices, unless a date of birth could be better defined. See the list of sightings of Comets above, p. 39.

420 Lammens, "L'Age de Mahomet," 214.

421 See for example: Mūsā Ibn Nawbaḫt, *al Kitāb al Kāmil* (Madrid: Instituto Hispano-Arabe de Cultura; Bellaterra: Universidad Autónoma de Barcelona, 1982), and Edward S. Kennedy, "Two Topics from an Astrological Manuscript: Sindhind Days and Planetary Latitudes," in: *Zeitschrift für Geschichte der Arabisch-Islamischen Wissenschaften.* (Frankfurt am Main: Institut für Geschichte der Arabisch-Islamischen Wissenschaften an der Johann Wolfgang Goethe-Universität, 1990): 6: 167-178. As most of these calculations seem to be based on the accepted chronology of Muḥammad's life, there seems little that they can contribute to the debate, though a fuller study would be needed to do them justice.

conjunction of Saturn and Jupiter as a sign of the coming birth of someone important. This discussion could give some indirect indications of chronology.

"There are four astrological triplicities, each composed of three zodiacal signs, so chosen that lines joining the initial points of the signs making up any triplicity form an equilateral triangle. Each of the four Aristotelian elements (fire, earth, air and water) is associated with a triplicity, containing respectively Aries, then Taurus, Gemini, and Cancer."

"The period of the planet Saturn is about thirty years; that of Jupiter is twelve. This implies that twenty years after Jupiter has left a position of mean conjunction with Saturn it will have made a complete trip around the ecliptic during the first twelve years; in the remaining eight it will traverse an additional two thirds of the circumference. There it will catch up with Saturn, which during the twenty years will have accomplished only two thirds of a complete circuit. Thus a second mean conjunction will occur, tending to be in the same triplicity as the first. In fact, the two mean periods are not precisely thirty and twelve years. They are so related that each successive mean conjunction takes place a bit farther forward along the ecliptic than it did in its previous conjunction. Eventually the conjunctions slip over into the next triplicity. The interval between successive shifts of triplicity is about two and a half centuries. It was asserted that each shift is accompanied on earth by a fundamental political or religious change."[422] The conjunction which is supposed to have marked the birth of Muḥammad is dated in AD 571.[423] The fact that AD 571 was associated with Muḥammad's birth because of astrological calculations, could be a reason why it was chosen as his birth date, though this can not be proved.

Conclusion

In attempting to fix or even date Muḥammad's birth we are faced with seemingly insurmountable problems, in that the event only became of importance once Muḥammad had been recognised by

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[422] Edward S. Kennedy, "An Astrological history based on the career of Genghis Khan," Reprinted from *Quest for Understanding: Arabic and Islamic Studies in Memory of Malcolm H. Kerr.* Edited by S. Seikaly, R. Baalbaki, P. Dodd. (American University of Beirut, 1991): 223-4.

[423] In a marginal note which accompanies the horoscope for this event, we read "The conjunction of the religion, which is 40 years from the epoch of the Elephant and it is one year from the epoch of the Elephant (sic) which is approximately 83 years from the Hijra or is the conjunction." Though the editor attempts to correct the text, the possibility remains that the "40 years from the Elephant... which was 83 years from the Hiğra," could be correct. This would put the Year of the Elephant between AD 531 and AD 539. David Pingree, *The Thousands of Abū Ma'shar* (London: The Warburg Institute, 1968), 95.

the Islamic community as The Prophet. Once the question had become worthy of consideration, a number of contradictory dates were postulated.

This also leads us to the conclusion that Muḥammad's birth date was not known well enough to make the link seem implausible. This conclusion is further strengthened by Conrad's argument, supported by various examples, that the use of the number forty in describing Muhammad's age when he received the first revelation was more of a literary device to express the idea of a large number, while at the same time insisting that he had reached full maturity.[424] The impression is, therefore, that Muḥammad's date of birth was calculated back from later, better known, dates.

That one of the theories may be correct is by no means inconceivable, but at this time, we have no way of knowing which one it is. What does seem reasonable as a conclusion, is that the Year of the Elephant and Muḥammad's birth were not directly linked.

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[424] Conrad, "Abraha and Muḥammad," 230-232 and 232-234. See also Qur'ān 46:15, "... when he (man) reaches maturity and the age of forty..."

CONCLUSION

So protracted and intense has the discussion about the calendar and chronology of the early Muslim community been, that it is difficult for modern research to progress without taking into account the concept of hindsight chronology. This factor will initially make research more difficult as the researcher attempts to discern whether sources bear the mark of previous editors who, in passing on a tradition, have imposed their understanding of what calendar system was in use.[425] It is also for this reason that research will often have to concentrate on minor details, too insignificant to have merited editing or secondary to the main story being told, when attempting to discover which sources are the most reliable. As results are accumulated, the work will gain momentum and later studies will be able to build upon the results of those which have preceded them.

The source material available is so rich and varied that this study has barely scratched the surface and it will require many other pieces of research, each concentrating on a different category of material,[426] as well as reviewing previous results in the light of newer discoveries, before the subject could be said to have been exhausted.

Qur'ān

The study of the Qur'ānic texts has not brought to light any remarkable chronological data, but has underlined the necessity of using all the resources available. Islam recognises some variant readings as being orthodox and to ignore the information that they contain would amount to negligence on the part of any serious researcher.[427] From there it is but a short step to considering

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[425] This editing need not have been either malicious or heavy-handed. The simple fact of adding a month name to a tradition which originally only gave a number of months, would be enough.

[426] These would not only include Islamic historical sources such as sīra and maġāzi, but also astrological texts, Ethiopian studies which could help to identify and date the Negus, South Arabian studies to fix the era and in the hope of finding other inscriptions which would help fill the gaps in our knowledge of events surrounding Abraha's reign, Roman, Persian, Jewish and Christian sources would also need to be evaluated.

[427] The fact that the study of the variants revealed no significant details does not detract from the necessity of noting that the research was carried out, in order to facilitate the task of those who may wish to continue the work.

the information available in non-orthodox readings, not as a challenge to the authenticity of the accepted text, but as a possible secondary source of information.

Another challenge to the researcher are the words of non-Arabic origin to be found in the texts. Though much has been achieved, in explaining the roots of many of them, others continue to be an enigma. The text concerning the Year of the Elephant contains vocabulary which is not completely clear.

Ḥadīṯ

In this work we have seen that the great ḥadīṯ collections contain numerous minor variations of the more important traditions, which encourages researchers to hope that the scrupulous way the variants are recorded is an indication that, somewhere in the corpus, original and unaltered traditions are to be found. The reverse side of the coin is, of course, that the plethora of details makes it all the more difficult to identify the "authentic tradition" from the variants.

Though the present study has not yielded any chronological fixes, it would be incorrect to conclude that ḥadīṯ texts are of no value to historical research. A great deal has been written about the value and reliability of Ḥadīṯ literature with opinions varying from "totally unreliable" to "unquestionably true". Though the truth probably lies somewhere in between, experience has shown that each text has to be judged on its own merits. To ignore this would eventually lead the researcher either to ignore valuable texts or conversely, to build theories on sources which cannot withstand detailed scrutiny. Traditionally, the trustworthiness of individual ḥadīṯ was gauged by studying their *isnād*, or chain of transmission, while relatively little attention was paid to the *matn* or body of the tradition. The detailed study of the eclipse texts shows a remarkable degree of accuracy when comparing them to descriptions of the events based upon astronomical predictions. Calculations in such detail, have only relatively recently been available, which precludes the possibility that these texts were pure fabrication. Such accuracy has to lead to the conclusion that when such cross-checking is possible, the body of a tradition could be accepted even if its chain of transmission were to be highly questionable. Here too, as with the Qur'ān, the possibility that ḥadīṯ which are not accepted within the orthodox collections could contain valuable historical material, must be considered.

Calendars

Though we know a good deal about some of the calendars in use in the Region, we are far from being able to say that no mysteries remain! The Jewish calendar is eminently decipherable, but it would help if we had something to confirm that it was in use in the Jewish communities which lived in and around Madīna. Discussion continues around the beginning of the South Arabian Era and any further lapidary evidence of Abraha's activities and their dating could contribute significantly to the debate on the Year of the Elephant.

If the etymological conclusions about the old, pre-Hiğra calendar are correct, we are faced with different possible conclusions depending upon whether old pre-Hiğra and the pre-Hiğra calendars are deemed to have both been luni-solar, lunar or a mixture. Only further research may be able to help us better define these calendars.

Nāsi'

No traditions mention events which occurred during the intercalary month, or if they do, we are unable to identify them as the word *nāsi'* is not used. Nevertheless, there are indications that an intercalary system was used and the evidence is all the stronger coming, as it does, from a non-Islamic source.[428] Encouraging as this is, we have also seen that even when interpreting the same sources and using the similar basic assumptions, it is possible to create different calendars, as is evident from a comparison of Caussin de Perceval's table of concordance, Hashīm Amīr ʿAlī's and our own. These three tables are based upon the assumption that Muḥammad stopped intercalation at a time when the lunar and luni-solar calendars were in conjunction, but there is no real evidence either for or against this theory and, if there were, nothing concrete emerges to show that the two calendars came together at that time, rather than this too being just another product of wishful thinking or hindsight chronology.[429]

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[428] Procopius, *History of the Wars*, II: 403. Though Procopius gives the impression that the Arabs did the same thing every year at the same time and this is an indication that a solar or luni-solar calendar was in use, we still do not know if the calendar he was talking about is the pre-Hiğra one.

[429] Until more is known, both about the calendars and where authors such as Bīrūnī obtained their information, there is nothing to indicate that a record of the purely lunar calendar, as it should have been, was being kept, and so it is impossible to know if the two calendars did in fact coincide in AH 10.

Hiğra to Death

This period is the richest both in terms of important events in the life of Muḥammad and the early Islamic community. It is also much better "documented" than the earlier years. Despite this, much remains to be clarified and, in an ideal world, a chronological fix identified. There is serious doubt that Ibrāhīm's death occurred on the day of a solar eclipse, and once doubts are raised regarding the date of his death, all other dates in his short life become suspect too. In all probability, the most reliable date that we have for this period is that of Muḥammad's death.

Hiğra

Study of the accounts of the Hiğra and traditions concerning its dating or correspondence with a Jewish feast has not led to any convincing conclusions. This is obviously a critical date for Islamic history, especially as it serves to define the Hiğra calendar as we know it today.[430]

Pre-Hiğra

Muḥammad's birth and the events leading up to it, his early life and the beginning of his ministry remain poorly documented in historical terms, despite the abundance of stories and traditions surrounding these events. Serious and painstaking analysis of the available information does raise some serious questions, both about linking Muḥammad's birth to the attempted raid on Makka, the dating of the Year of the Elephant and the possibility that the calculation of his date of birth owes more to spiritual reasoning than to historical data, thus making him older than he actually was. However, it has to be emphasised that, at this time, there are no clear-cut answers.

Many of the studies into the chronology of this period were carried out at the turn of the century, when a high proportion of source material was still unedited. Today, many of the major reference works have been published, simplifying the task of the researcher. Nevertheless, the corpus of material deserving detailed investigation is impressive and there is always the hope that somewhere, either before our eyes, but unrecognised, or in some yet-to-be-studied or discovered

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[430] It may be doubtful that the Hiğra calendar would be changed if it were proved that the historical facts did not match the assumptions used to define it originally, nevertheless, any better definition of dates is highly desirable.

manuscript, a text exists which will help shed light on the chronology of this period. This study is only a beginning.

APPENDIX I : South Arabian Inscriptions

Concerning Abraha

Ryckmans 506. Murayġān[431]

1. "By the strength of the Merciful (Raḥmānān). The king Abraha Zybmn, king of Saba, Ḏū Raydān, Ḥaḍramūt and

2. the Yemens, their Arabs on the high plateau and the coastal plain, wrote this when

3. Maʿaddum undertook the spring campaign, in the month of Ḏū Ṯabtān,[432] at a time when the banū ʿAmirim had risen.

4. And the king put Abgabar at the head of Kiddat and ʿAl and Bašīrum, son of Ḥuṣnum were at the head of

5. Saʿīdum. They struck (?) and battled at the head of the troop: Kiddat against the banū ʿAmirim and ... Murādum and Saʿīdum in the valley (?)

6. on the road to Turabān. And they were killed and taken prisoner. Whoever fled was struck down by the king at Ḥalibān.[433]

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[431] Gonzague Ryckmans, "Inscriptions sud-arabes: dixième série," *Le Muséon* 66 (1953): 275-84.

[432] The author places this month at the end of spring, in May-June, Beeston places it earlier, in April, see above: The South Arabian Calendar, p. 7.

[433] A village south of the road between Makka and Riyad.

7. Ma'addum disappeared like a shadow. They gave pledges. After that ʿAmrum son of Muḏḏirān[434] acted as guarantor.

8. He (Muḏḏirān) delegated his son to be governor of Ma'addum. They came back from Ḥali-

9. [bā]n, by the power of the Merciful, in the year sixty-two and

10. six hundred."[435]

Ma'rib dam, (CIH 541)[436]

1-8 By the might and aid and mercy of the Merciful and of His Messiah and the Holy Spirit. They have written this inscription: Behold Abraha who has been exalted, the king, the descendant of men of Ge'ez, the *ramaiḥis*, Za Bayman, king of Saba and Ḏū Raydān and Ḥaḍramawt and Yamanāt and of their Arabs on the plateau and in Tihamat.

9-24 Now they have written this inscription stating that: He subjected and recognised as ruler by decree Yazīd b. Kabšat in their province, whom they accepted over Kidat Wada'. He was established as deputy for him and was subject; and with him were the *qayl*-princes of Saba, the men of experience, Murrat and Ṯamimat and Ḥaniš and Marṯad and Ḥanif Ḏū Ḫalil and the men of Za'an, *qayl*-princes, Maʿadi-karib b. Sumu-yafaʿ and Haʿān and their brethren, bany 'Aslam. And further that: They sent in peace Garrah Ḏū ZBNR that he might be supreme in the east.

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[434] This is ʿAmr, son of al Mundir III, the Laḫmid ruler of al Ḥīra, who ruled from about AD 505-554. ʿAmr ruled after him from AD 554-569.

[435] The author dates this inscription which is 662 in the Sabean era as AD 547.

[436] Translation from Sidney Smith, "Events in Arabia in the 6th Century A.D. ," 425-468. The translation is used with minor alterations in spelling and transliteration.

And the garrisons of Kidar killed him and plundered. And Yazīd collected those put under his command, *ḍhṭ ʿhw*, from Kiddat, and made war on Ḥaḍramawt, and seized Mazin, the runaway, the descendent of men of the Ḍammar sept, and returned to ʿAbran.

24-46 Then the report reached them, and the Ḥabašat and Ḥimyar called up and collected their armies by thousands in the month Ḍū Qayẓan[437] of 657. And the generals of Saba set out and penetrated from Ṣirwaḥ to Nabaṭ in ʿAbran. And when they reached Nabaṭ, Kidar had appointed their battle force (to posts). And Ḥimyar delayed and collected information and their commanders were Wāṭih and ʿAwdah both Ḍū Ǧadan, Then Yazīd reached them in Nabaṭ, and held back his hand from them (the enemy) before appointing the battle force. And then a report reached them concerning Saba, that the ramp and the dike and the catchment basin and the frontal work were broken in the month of Ḍū Maḍra'an[438] of (year) 7.

46-55 Then after this mandate reached them, the runners presented a covenant which the Arab sept of Wada', who were under orders with Yazīd, judged good, (to the effect) that all of them should hold their hands back, and give them pledges by the runner, and as to the battle force Kidar had appointed, the *qayl*-princes should join (it) to those who were subject.

55-63 And the king appointed a time incumbent on the tribes (for the return) to ditches and plastering and cut terraces and *bar'a*-land and pitch-pit, and workmen's shops, and mud-bank, for to repair the ramp and the dike and the breaches that were in Marib, and

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[437] This month probably corresponds to June, see above: The South Arabian Calendar, p.7f .

[438] Probably July. Ibid.

imposed a promise on them in the month Ḏū Ṣarban[439] of (year) 7.

63-75 Now after they had appointed the time and the Arab judged (it) good, they made for the city of Marib, and they prayed at the church of Marib, for therein (in the city) were a priest, father of a mission (?) and his "son". They lifted the ramp away and dug till they reached the rent, and at a point above the rent, to base the dike, there was anxiety and care[440] for the tribes and the city. And all who saw how this anxiety had come nigh upon the tribes made praises heard for them for the *'aḥabiš* of (among) them and the Himyarites of (among) them.

76-80 And after that they had made praises heard for the tribes, the *qayl*-princes who had fortified themselves in Kidar went down and when they reached the king with the battle force which they had appointed to join them, then the king and his son held back their hands (from war with them).

80-87 The king decreed in the city Marib: "The builders of the ramp and the *qayl*-princes who were there are *illustrissimi*". Then he had brought before him their "sons": Aksum Ḏū ḌRNḤ, and ʿAdug Ḏū Fayiš and SYWLMN, and Ḏū Šaʿban and Ḏū Ruʿain and Ḏū Hamdan and Ḏū Kulaʿan and Ḏū Mahadd and others entitles Ḏū, and a strong one, Ḏū Yaz'an, and Ḏū Ḏubayn, and the *kabir*-officers of Ḥaḍramawt and of *qrnt*.

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[439] Probably October. Ibid.

[440] There have been different readings of these words: "Glaser, *ḍllm wʿwśm*, a common phrase which does not mean *pernicies et pestilentia*, as *CIH* renders: *CIH* 540/68-9, *ḍllm wmwtm*, 'anxiety, even death', Fakhry, clearly *bllm*: if this is correct, compare Arabic *balla*, 'to moisten', then 'to exercise benevolence',... Smith, "Events in Arabia in the 6th Century A. D.,", n. 7, 439. This point is an important one, in that if the text does talk of pestilence or plague, it could help in dating both the text and the Sabean era.

87-92 And it was then that there reached them the embassy of the *nagaši*, and there reached them an embassy of the Roman king, and a delegation of the king of Fars, and an envoy of Muḏḏiran (al Munḏir), and an envoy of Abu-karib b. Gabalat.

92-101 And then after those who wished had prayed in praise of the Merciful, the tribes went according to the previous (fixed) time that he (the king) should call them up, according to their promise for later. And when the tribes arrived at the term of the later Ḏū Da'awn[441] and when they sent them, the tribes, to their duties, they repaired what was broken from the dike, about which Ya'fur had given orders obligatory on Saba' and the *qayl*-princes who were *'am ṭnkn*. And he gave them instructions.

102-114 [Describes the repair of a measured section of the dike, the ditching to reconstruct the ramp and its plaster facing, and the improvement of the area irrigated from the catchment basin so that the outflow could run straight on with two channels from the point of divergence.]

114-137 And so they completed the work within the period for which they were under obligation at their sections. And Yad'-'il and a butcher gave a blessing at the church and the dike and the ramp over 5,806 of flour and 26,000 of dates of the *bqnt* kind. There were 3,000 slaughtered beasts, both cows and small cattle, and 300 camels, fast, darkish and with cut ears (she-camels) and 11,000 turtle doves, ... And they perfected their building work on

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[441] Probably January, see above: The South Arabian Calendar, 7f, however the mention of "later" could indicate that it was an intercalary month.

the 58th day (that they were responsible for their sections) in the 11th hour, in the month Ḏū Maʿan[442] 658.

[442] Probably March. Ibid. The year would be AD 547-8, or 542-3.

APPENDIX II : The Jewish Calendar[443]

Year	Cycle	Position Type	Molad	No. Days	New Year 01 Tishri		Day of Atonement 10 Tishri		Feast of Tabernacles 15 Tishri		Feast of the Law		Purim	Passover 15 of Nisan		Feast of Weeks		ABII
4295	227	1o	1 01 754	353	Monday	5340925	Wednesday	5341004	Monday	5341009	Tuesday	5341017	5350304	Tuesday	5350403	Wednesday	5350523	5350724
4296	227	2o	5 10 550	355	Thursday	5350913	Saturday	5350922	Thursday	5350927	Friday	5351005	5360222	Sunday	5360323	Monday	5360512	5360713
4297	227	3e	2 19 346	384	Tuesday	5360902	Thursday	5360911	Tuesday	5360916	Wednesday	5360924	5370312	Saturday	5370411	Sunday	5370531	5370801
4298	227	4o	1 16 935	355	Monday	5370921	Wednesday	5370930	Monday	5371005	Tuesday	5371013	5380302	Thursday	5380401	Friday	5380521	5380722
4299	227	5o	6 01 731	353	Saturday	5380911	Monday	5380920	Saturday	5380925	Sunday	5381003	5390318	Sunday	5390320	Monday	5390509	5390710
4300	227	6e	3 10 527	384	Tuesday	5390830	Thursday	5390908	Tuesday	5390913	Wednesday	5390921	5400308	Saturday	5400407	Sunday	5400527	5400728
4301	227	7o	2 08 036	355	Monday	5400917	Wednesday	5400926	Monday	5401001	Tuesday	5401009	5410226	Thursday	5410328	Friday	5410517	5410718
4302	227	8e	6 16 912	383	Saturday	5410907	Monday	5410916	Saturday	5410921	Sunday	5410929	5420316	Tuesday	5420415	Wednesday	5420604	5420805
4303	227	9o	5 14 421	355	Thursday	5420925	Saturday	5421004	Thursday	5421009	Friday	5421017	5430306	Sunday	5430405	Monday	5430525	5430726
4304	227	10o	3 23 217	354	Tuesday	5430915	Thursday	5430924	Tuesday	5430929	Wednesday	5431007	5440223	Thursday	5440324	Friday	5440513	5440714
4305	227	11e	7 08 013	385	Saturday	5440903	Monday	5440912	Saturday	5440917	Sunday	5440925	5450314	Thursday	5450413	Friday	5450602	5450803
4306	227	12o	6 05 602	355	Saturday	5450923	Monday	5451002	Saturday	5451007	Sunday	5451015	5460304	Tuesday	5460403	Wednesday	5460523	5460724
4307	227	13o	3 14 398	354	Thursday	5460913	Saturday	5460922	Thursday	5460927	Friday	5461005	5470221	Saturday	5470323	Sunday	5470512	5470713
4308	227	14e	7 23 194	383	Monday	5470902	Wednesday	5470911	Monday	5470916	Tuesday	5470924	5480310	Thursday	5480409	Friday	5480529	5480730
4309	227	15o	6 20 783	355	Saturday	5480919	Monday	5480928	Saturday	5481003	Sunday	5481011	5490228	Tuesday	5490330	Wednesday	5490519	5490720
4310	227	16o	4 05 579	354	Thursday	5490909	Saturday	5490918	Thursday	5490923	Friday	5491001	5500217	Saturday	5500319	Sunday	5500508	5500709
4311	227	17e	1 14 375	383	Monday	5500829	Wednesday	5500907	Monday	5500912	Tuesday	5500920	5510307	Thursday	5510406	Friday	5510526	5510727
4312	227	18o	7 11 964	355	Saturday	5510916	Monday	5510925	Saturday	5510930	Sunday	5511008	5520225	Tuesday	5520326	Wednesday	5520515	5520716
4313	227	19e	4 20 760	385	Thursday	5520905	Saturday	5520914	Thursday	5520919	Friday	5520927	5530316	Tuesday	5530415	Wednesday	5530604	5530805
4314	228	1o	3 18 269	354	Thursday	5530925	Saturday	5531004	Thursday	5531009	Friday	5531017	5540305	Saturday	5540404	Sunday	5540524	5540725
4315	228	2o	1 03 065	353	Monday	5540914	Wednesday	5540923	Monday	5540928	Tuesday	5541006	5550221	Tuesday	5550323	Wednesday	5550512	5550713
4316	228	3e	5 11 941	385	Thursday	5550902	Saturday	5550911	Thursday	5550916	Friday	5550924	5560312	Tuesday	5560411	Wednesday	5560531	5560801
4317	228	4o	4 09 450	354	Thursday	5560921	Saturday	5560930	Thursday	5561005	Friday	5561013	5570301	Saturday	5570331	Sunday	5570520	5570721
4318	228	5o	1 18 246	355	Monday	5570910	Wednesday	5570919	Monday	5570924	Tuesday	5571002	5580219	Thursday	5580321	Friday	5580510	5580711
4319	228	6e	6 03 042	383	Saturday	5580831	Monday	5580909	Saturday	5580914	Sunday	5580922	5590309	Tuesday	5590408	Wednesday	5590528	5590729
4320	228	7o	5 00 631	354	Thursday	5590918	Saturday	5590927	Thursday	5591002	Friday	5591010	5600226	Saturday	5600327	Sunday	5600516	5600717
4321	228	8e	2 09 427	385	Monday	5600906	Wednesday	5600915	Monday	5600920	Tuesday	5600928	5610317	Saturday	5610416	Sunday	5610605	5610806
4322	228	9o	1 06 1016	353	Monday	5610926	Wednesday	5611005	Monday	5611010	Tuesday	5611018	5620305	Tuesday	5620404	Wednesday	5620524	5620725

[443] "o" for ordinary and "e" for embolismic.

Year	Cycle	Position Type	Molad	No. Days	New Year 01 Tishri		Day of Atonement 10 Tishri		Feast of Tabernacles 15 Tishri		Feast of the Law		Purim	Passover 15 of Nisan		Feast of Weeks		ABH
4323	228	10o	5 15 812	355	Thursday	5620914	Saturday	5620923	Thursday	5620928	Friday	5621006	5630224	Sunday	5630325	Monday	5630514	5630714
4324	228	11e	3 00 608	384	Tuesday	5630904	Thursday	5630913	Tuesday	5630918	Wednesday	5630926	5640313	Saturday	5640412	Sunday	5640601	5640802
4325	228	12o	1 22 117	355	Monday	5640922	Wednesday	5641001	Monday	5641006	Tuesday	5641014	5650303	Thursday	5650402	Friday	5650522	5650723
4326	228	13o	6 06 993	353	Saturday	5650912	Monday	5650921	Saturday	5650926	Sunday	5651004	5660219	Sunday	5660321	Monday	5660510	5660711
4327	228	14e	3 15 789	384	Tuesday	5660831	Thursday	5660909	Tuesday	5660914	Wednesday	5660922	5670310	Saturday	5670409	Sunday	5670529	5670730
4328	228	15o	2 13 298	355	Monday	5670919	Wednesday	5670928	Monday	5671003	Tuesday	5671011	5680227	Thursday	5680329	Friday	5680518	5680719
4329	228	16o	6 22 094	355	Saturday	5680908	Monday	5680917	Saturday	5680922	Sunday	5680930	5690217	Tuesday	5690319	Wednesday	5690508	5690709
4330	228	17e	4 06 970	383	Thursday	5690829	Saturday	5690907	Thursday	5690912	Friday	5690920	5700307	Sunday	5700406	Monday	5700526	5700727
4331	228	18o	3 04 479	354	Tuesday	5700916	Thursday	5700925	Tuesday	5700930	Wednesday	5701008	5710225	Thursday	5710326	Friday	5710515	5710716
4332	228	19e	7 13 275	385	Saturday	5710905	Monday	5710914	Saturday	5710919	Sunday	5710927	5720315	Thursday	5720414	Friday	5720603	5720804
4333	229	1o	6 10 864	355	Saturday	5720924	Monday	5721003	Saturday	5721008	Sunday	5721016	5730305	Tuesday	5730404	Wednesday	5730524	5730725
4334	229	2o	3 19 660	354	Thursday	5730914	Saturday	5730923	Thursday	5730928	Friday	5731006	5740222	Saturday	5740324	Sunday	5740513	5740714
4335	229	3e	1 04 456	383	Monday	5740903	Wednesday	5740912	Monday	5740917	Tuesday	5740925	5750312	Thursday	5750411	Friday	5750531	5750801
4336	229	4o	7 01 1045	355	Saturday	5750921	Monday	5750930	Saturday	5751005	Sunday	5751013	5760301	Tuesday	5760331	Wednesday	5760520	5760721
4337	229	5o	4 10 841	354	Thursday	5760910	Saturday	5760919	Thursday	5760924	Friday	5761002	5770218	Saturday	5770320	Sunday	5770509	5770710
4338	229	6e	1 19 637	383	Monday	5770830	Wednesday	5770908	Monday	5770913	Tuesday	5770921	5780308	Thursday	5780407	Friday	5780527	5780728
4339	229	7o	7 17 146	355	Saturday	5780917	Monday	5780926	Saturday	5781001	Sunday	5781009	5790226	Tuesday	5790328	Wednesday	5790517	5790718
4340	229	8e	5 01 1022	385	Thursday	5790907	Saturday	5790916	Thursday	5790921	Friday	5790929	5800317	Tuesday	5800416	Wednesday	5800605	5800806
4341	229	9o	3 23 531	354	Thursday	5800926	Saturday	5801005	Thursday	5801010	Friday	5801018	5810306	Saturday	5810405	Sunday	5810525	5810726
4342	229	10o	1 08 327	353	Monday	5810915	Wednesday	5810924	Monday	5810929	Tuesday	5811007	5820222	Tuesday	5820324	Wednesday	5820513	5820714
4343	229	11e	5 17 123	385	Thursday	5820903	Saturday	5820912	Thursday	5820917	Friday	5820925	5830314	Tuesday	5830413	Wednesday	5830602	5830803
4344	229	12o	4 14 712	354	Thursday	5830923	Saturday	5831002	Thursday	5831007	Friday	5831015	5840302	Saturday	5840401	Sunday	5840521	5840722
4345	229	13o	1 23 508	355	Monday	5840911	Wednesday	5840920	Monday	5840925	Tuesday	5841003	5850221	Thursday	5850322	Friday	5850511	5850712
4346	229	14e	6 08 304	383	Saturday	5850901	Monday	5850910	Saturday	5850915	Sunday	5850923	5860310	Tuesday	5860409	Wednesday	5860529	5860730
4347	229	15o	5 05 893	354	Thursday	5860919	Saturday	5860928	Thursday	5861003	Friday	5861011	5870227	Saturday	5870329	Sunday	5870518	5870719
4348	229	16o	2 14 689	355	Monday	5870908	Wednesday	5870917	Monday	5870922	Tuesday	5870930	5880318	Thursday	5880417	Friday	5880606	5880807
4349	229	17e	6 23 485	385	Saturday	5880828	Monday	5880906	Saturday	5880911	Sunday	5880919	5890308	Thursday	5890407	Friday	5890527	5890728
4350	229	18o	5 20 1074	353	Saturday	5890917	Monday	5890926	Saturday	5891001	Sunday	5891009	5900224	Sunday	5900326	Monday	5900515	5900716
4351	229	19e	3 05 870	384	Tuesday	5900905	Thursday	5900914	Tuesday	5900919	Wednesday	5900927	5910315	Saturday	5910414	Sunday	5910603	5910804
4352	230	1o	2 03 379	355	Monday	5910924	Wednesday	5911003	Monday	5911008	Tuesday	5911016	5920304	Thursday	5920403	Friday	5920523	5920724
4353	230	2o	6 12 175	355	Saturday	5920913	Monday	5920922	Saturday	5920927	Sunday	5921005	5930222	Tuesday	5930324	Wednesday	5930513	5930714
4354	230	3e	3 20 1051	383	Thursday	5930903	Saturday	5930912	Thursday	5930917	Friday	5930925	5940312	Sunday	5940411	Monday	5940531	5940801
4355	230	4o	2 18 560	354	Tuesday	5940921	Thursday	5940930	Tuesday	5941005	Wednesday	5941013	5950301	Thursday	5950331	Friday	5950520	5950721
4356	230	5o	7 03 356	355	Saturday	5950910	Monday	5950919	Saturday	5950924	Sunday	5951002	5960219	Tuesday	5960320	Wednesday	5960709	5960710
4357	230	6e	4 12 152	385	Thursday	5960830	Saturday	5960908	Thursday	5960913	Friday	5960921	5970310	Tuesday	5970409	Wednesday	5970529	5970730
4358	230	7o	3 09 741	354	Thursday	5970919	Saturday	5970928	Thursday	5971003	Friday	5971011	5980227	Saturday	5980329	Sunday	5980518	5980719
4359	230	8e	7 18 537	383	Monday	5980908	Wednesday	5980917	Monday	5980922	Tuesday	5980930	5990317	Thursday	5990416	Friday	5990605	5990806
4360	230	9o	6 16 046	355	Saturday	5990926	Monday	5991005	Saturday	5991010	Sunday	5991018	6000306	Tuesday	6000405	Wednesday	6000525	6000726
4361	230	10o	4 00 922	354	Thursday	6000915	Saturday	6000924	Thursday	6000929	Friday	6001007	6010223	Saturday	6010325	Sunday	6010514	6010714
4362	230	11e	1 09 718	383	Monday	6010904	Wednesday	6010913	Monday	6010918	Tuesday	6010926	6020313	Thursday	6020412	Friday	6020601	6020802

Year	Cycle	Position Type	Molad	No. Days	New Year 01 Tishri		Day of Atonement 10 Tishri		Feast of Tabernacles 15 Tishri		Feast of the Law		Purim	Passover 15 of Nisan		Feast of Weeks		ABH
4363	230	12o	7 07 227	355	Saturday	6020922	Monday	6021001	Saturday	6021006	Sunday	6021014	6030303	Tuesday	6030402	Wednesday	6030522	6030723
4364	230	13o	4 16 023	354	Thursday	6030912	Saturday	6030921	Thursday	6030926	Friday	6031004	6040220	Saturday	6040321	Sunday	6040510	6040711
4365	230	14e	2 00 899	385	Monday	6040831	Wednesday	6040909	Monday	6040914	Tuesday	6040922	6050311	Saturday	6050410	Sunday	6050530	6050731
4366	230	15o	7 22 408	353	Monday	6050920	Wednesday	6050929	Monday	6051004	Tuesday	6051012	6060227	Tuesday	6060329	Wednesday	6060518	6060719
4367	230	16o	5 07 204	354	Thursday	6060908	Saturday	6060917	Thursday	6060922	Friday	6060930	6070216	Saturday	6070318	Sunday	6070507	6070708
4368	230	17e	2 16 000	385	Monday	6070828	Wednesday	6070906	Monday	6070911	Tuesday	6070919	6080222	Saturday	6080323	sunday	6080512	6080713
4369	230	18o	1 13 589	355	Monday	6080916	Wednesday	6080911	Monday	6080916	Tuesday	6080924	6090225	Thursday	6090327	Friday	6090516	6090717
4370	230	19e	5 22 385	383	Saturday	6090906	Monday	6090915	Saturday	6090920	Sunday	6090928	6100315	Tuesday	6100414	Wednesday	6100603	6100804
4371	231	1o	4 19 974	354	Thursday	6100924	Saturday	6101003	Thursday	6101008	Friday	6101016	6110304	Saturday	6110403	Sunday	6110523	6110724
4372	231	2o	2 04 770	355	Monday	6110913	Wednesday	6110922	Monday	6110927	Tuesday	6111005	6120222	Thursday	6120323	Friday	6120512	6120713
4373	231	3e	6 13 566	383	Saturday	6120902	Monday	6120911	Saturday	6120916	Sunday	6120924	6130311	Tuesday	6130410	Wednesday	6130530	6130731
4374	231	4o	5 11 075	355	Thursday	6130920	Saturday	6130929	Thursday	6131004	Friday	6131012	6140301	Sunday	6140331	Monday	6140520	6140721
4375	231	5o	2 19 951	354	Tuesday	6140910	Thursday	6140919	Tuesday	6140924	Wednesday	6141002	6150218	Thursday	6150320	Friday	6150509	6150710
4376	231	6e	7 04 747	385	Saturday	6150830	Monday	6150908	Saturday	6150913	Sunday	6150921	6160309	Thursday	6160408	Friday	6160528	6160729
4377	231	7o	6 02 256	353	Saturday	6160918	Monday	6160927	Saturday	6161002	Sunday	6161010	6170225	Sunday	6170327	Monday	6170516	6170717
4378	231	8e	3 11 052	384	Tuesday	6170906	Thursday	6170915	Tuesday	6170920	Wednesday	6170928	6180316	Saturday	6180415	Sunday	6180604	6180805
4379	231	9o	2 08 641	355	Monday	6180925	Wednesday	6181004	Monday	6181009	Tuesday	6181017	6190306	Thursday	6190405	Friday	6190525	6190726
4380	231	10o	6 17 437	355	Saturday	6190915	Monday	6190924	Saturday	6190929	Sunday	6191007	6200224	Tuesday	6200325	Wednesday	6200514	6200714
4381	231	11e	4 02 233	383	Thursday	6200904	Saturday	6200913	Thursday	6200918	Friday	6200926	6210313	Sunday	6210412	Monday	6210601	6210802
4382	231	12o	2 23 822	354	Tuesday	6210922	Thursday	6211001	Tuesday	6211006	Wednesday	6211014	6220302	Thursday	6220401	Friday	6220521	6220722
4383	231	13o	7 08 618	355	Saturday	6220911	Monday	6220920	Saturday	6220925	Sunday	6221003	6230220	Tuesday	6230322	Wednesday	6230511	6230712
4384	231	14e	4 17 414	385	Thursday	6230901	Saturday	6230910	Thursday	6230915	Friday	6230923	6240311	Tuesday	6240410	Wednesday	6240530	6240731
4385	231	15o	3 14 1003	354	Thursday	6240920	Saturday	6240929	Thursday	6241004	Friday	6241012	6250228	Saturday	6250330	Sunday	6250519	6250720
4386	231	16o	7 23 799	353	Monday	6250909	Wednesday	6250918	Monday	6250923	Tuesday	6251001	6260216	Tuesday	6260318	Wednesday	6260507	6260708
4387	231	17e	5 08 595	385	Thursday	6260828	Saturday	6260906	Thursday	6260911	Friday	6260919	6270308	Tuesday	6270407	Wednesday	6270527	6270728
4388	231	18o	4 06 104	354	Thursday	6270917	Saturday	6270926	Thursday	6271001	Friday	6271009	6280225	Saturday	6280326	Sunday	6280515	6280716
4389	231	19e	1 14 980	383	Monday	6280905	Wednesday	6280914	Monday	6280919	Tuesday	6280927	6290314	Thursday	6290413	Friday	6290602	6290803
4390	232	1o	7 12 489	355	Saturday	6290923	Monday	6291002	Saturday	6291007	Sunday	6291015	6300304	Tuesday	6300403	Wednesday	6300523	6300724
4391	232	2o	4 21 285	354	Thursday	6300913	Saturday	6300922	Thursday	6300927	Friday	6301005	6310221	Saturday	6310323	Sunday	6310512	6310713
4392	232	3e	2 06 081	385	Monday	6310902	Wednesday	6310911	Monday	6310916	Tuesday	6310924	6320312	Saturday	6320411	Sunday	6320531	6320801
4393	232	4o	1 03 670	353	Monday	6320921	Wednesday	6320930	Monday	6321005	Tuesday	6321013	6330228	Tuesday	6330330	Wednesday	6330519	6330720
4394	232	5o	5 12 466	355	Thursday	6330909	Saturday	6330918	Thursday	6330923	Friday	6331001	6340218	Sunday	6340320	Monday	6340509	6340710

Sequence of Months in the Jewish years

Common Years				Embolismic Years			
	Number of days in the months				Number of days in the months		
Month Names	Regular	Deficient	Abundant	Month Names	Regular	Deficient	Abundant
Tishrī	30	30	30	Tishrī	30	30	30
Marḥeshwān	29	29	30	Marḥeshwān	29	29	30
Kislêw	30	29	30	Kislêw	30	29	30
Ṭêbeth	29	29	29	Ṭêbeth	29	29	29
Shebhāṭ	30	30	30	Shebhāṭ	30	30	30
				Adhār	30	30	30
Adhār	29	29	29	Ve-Adhār	29	29	29
Nīsān	30	30	30	Nīsān	30	30	30
Iyār	29	29	29	Iyār	29	29	29
Sīwān	30	30	30	Sīwān	30	30	30
Tammūz	29	29	29	Tammūz	29	29	29
Ābh	30	30	30	Ābh	30	30	30
'Elūl	29	29	29	'Elūl	29	29	29
Total	354	353	355		384	383	385

APPENDIX III : Caussin de Perceval's Pre-Hiğra Calendar[444]

Years of the institution of the nasī'	Beginning of Muḥarram	Date of Pilgrimage
1	4121121	4131021
Nasī'	4131110	
2	4131209	4141109
3	4141128	4151029
4	4151118	4161019
7	4181115	4191016
10	4211112	4221013
13	4241109	4251010
16	4271106	4281007
19	4301103	4311004
22	4331031	4341001
25	4361028	4370928
29	4391025	4400925
31	4421022	4430922
34	4451018	4460918
37	4481015	4490915
40	4511012	4520912
43	4541009	4550909
46	4571006	4580906
49	4601003	4610903
Nasī'	4310922	
50	4611021	4620921
51	4621011	4630911
52	4630930	4640831
55	4660927	4670828
58	4690924	4700825
61	4720921	4730822
64	4750917	4760818
67	4780914	4790815
70	4810911	4820812
73	4840908	4850809
76	4870905	4880806
79	4900902	4910803
82	4930830	4940731
85	4960827	4970728
88	4990824	5000725
91	5020821	5030722
94	5050817	5060718
97	5080814	5090715
100	5110811	5120712
103	5140808	5150709
106	5170805	5180706
109	5200802	5210703
112	5230730	5240630
115	5260727	5270627
118	5290724	5300624
121	5320721	5330621
124	5350717	5360617
127	5380714	5390614
Nasī'	5390703	
128	5390801	5400702
129	5400721	5410622
130	5410711	5420611
133	5440708	5450608
136	5470705	5480605
139	5500702	5510602
142	5530629	5540530
145	5560626	5570527
148	5590623	5600524
151	5620620	5630521
154	5650616	5660517
157	5680613	5690514
160	5710610	5720511
163	5740607	5750508
166	5770604	5780505
169	5800601	5810502
172	5830529	5840429
175	5860526	5870426
178	5890523	5900423
181	5920520	5930420
184	5950516	5960416
187	5980513	5990413
190	6010510	6020410
193	6040507	6050407
196	6070504	6080404
199	6100501	6110401
202	6130428	6140328
205	6160425	6170325
208	6190422	6200322

Hiğra years	Years of the institution of the nasī'	Beginning of Muḥarram	Date of Pilgrimage
1	211	6220419	6230319
	Nasī'	6230408	
2	212	6230507	6240407
3	213	6240426	6250326
4	214	6250415	6260315
	Nasī'	6260404	
5	215	6260503	6270403
6	216	6270423	6280323
7	217	6280412	6290312
	Nasī'	6290402	
8	218	6290501	6300401
9	219	6300420	6310320
10	220	6310409	6320309

[444] The English translation of Perceval's article, Louis Nobiron, "Notes on the Arab Calendar before Islam," *Islamic Culture* 21 (1947): 135-153, reproduces the table but introduces a number of errors.

APPENDIX IV : Hāshim Amīr ʿAlī Table of Concordance[445]

CHRISTIAN				JEWISH			LUNI-SOLAR				IIIĞRI	
				Secular		Religious	Hāshim Amir 'Alī		Perceval			
Year	Day	Date	Month	Month	Year	Month	Month	Year	Month	Year	Month	Year
622	Saturday	17	April	08	4382	02	01	1	01	1		
	Sunday	16	May	09	(12)	03	02		02			
	Tuesday	15	June	10		04	03		03			
	Wednesday	14	July	11		05	04		04		01	1
	Friday	13	August	12		06	05		05		02	
	Saturday	11	September	01	4383	07	06		06		03	
	Monday	11	October	02	(13)	08	07		07		04	
	Wednesday	10	November	03		09	08		08		05	
	Friday	10	December	04		10	09		09		06	
623	Monday	08	January	05		11	10		10		07	
	Wednesday	07	February	06		12	11		11		08	
	Thursday	08	March	07		01	12		12		09	
	Saturday	07	April	08		02	01	2	Nasī'		10	
	Sunday	06	May	09		03	02		01	2	11	
	Tuesday	05	June	10		04	03		02		12	
	Wednesday	04	July	11		05	04		03		01	2
	Friday	03	August	12		06	05		04		02	
	Thursday	01	September	01	4384	07	06		05		03	
	Saturday	01	October	02	(14)	08	07		06		04	
	Monday	31	October	03		09	08		07		05	
	Wednesday	30	November	04		10	09		08		06	
	Thursday	29	December	05		11	10		09		07	
624	Saturday	28	January	06		12	11		10		08	
	Monday	27	February	veAdhâr			12		11		09	
	Tuesday	27	March	07		01	Nasī'		12		10	
	Thursday	26	April	08		02	01	3	1	3	11	
	Friday	25	May	09		03	02		2		12	
	Sunday	24	June	10		04	03		03		01	4
	Monday	23	July	11		05	04		04		02	
	Wednesday	22	August	12		06	05		05		03	
	Friday	20	September	01	4385	07	06		06		04	
	Saturday	20	October	02	(15)	08	07		07		05	
	Sunday	18	November	03		09	08		08		06	
	Tuesday	18	December	04		10	09		09		07	
625	Wednesday	16	January	05		11	10		10		08	

[445] This table is a replica of the one published by the author. The headings of the columns do not explain very clearly their function. Hence the "Christian" column contains the Julian dates for the beginning of the Jewish months. Some typographical errors have crept into the original tables and have been corrected here: AD 623 January to December 10 was added to the dates so that they were given as 18, 17, 18, 17, 16, 15, 14 and 13, instead of the dates shown in the corrected table, AD 624 August 2 should read 22, AD 624 October 18 should read November 18, AD 626 July 30 Monday should read Wednesday, AD 630 December 2 should read 11 and AD 632 28 May should read 26. Under Jewish the Year column contains the Year number, and underneath, the position of that year in the nineteen-year cycle. In the original table, the intercalary month was written "I Adar".

CHRISTIAN				JEWISH			LUNI-SOLAR				HIĞRI	
				Secular		Religious	Hâshim Amir 'Alî		Perceval			
Year	Day	Date	Month	Month	Year	Month	Month	Year	Month	Year	Month	Year
	Friday	15	February	06		12	11		11		09	
	Saturday	16	March	07		01	12		12		10	
	Monday	15	April	08		02	01	4	01	4	11	
	Tuesday	14	May	09		03	02		02		12	
	Thursday	13	June	10		04	03		03		01	5
	Friday	12	July	11		05	04		04		02	
	Sunday	11	August	12		06	05		05		03	
	Monday	09	September	01	4386	07	06		06		04	
	Wednesday	09	October	02	(16)	08	07		07		05	
	Thursday	07	November	03		09	08		08		06	
	Friday	06	December	04		10	09		09		07	
626	Saturday	04	January	05		11	10		10		08	
	Monday	03	February	06		12	11		11		09	
	Tuesday	04	March	07		01	12		12		10	
	Thursday	03	April	08		02	01	5	Nasī'		11	
	Friday	02	May	09		03	02		01	5	12	
	Sunday	01	June	10		04	03		02		01	5
	Monday	30	June	11		05	04		03		02	
	Wednesday	30	July	12		06	05		04		03	
	Thursday	28	August	01	4387	07	06		05		04	
	Saturday	27	September	02	(17)	08	07		06		05	
	Monday	27	October	03		09	08		07		06	
	Wednesday	26	November	04		10	09		08		07	
	Thursday	25	December	05		11	10		09		08	
627	Saturday	24	January	06		12	11		10		09	
	Monday	23	February	veAdhâr			12		11		10	
	Tuesday	24	March	07		01	Nasī'		12		11	
	Thursday	23	April	08		02	01	6	01	6	12	
	Friday	22	May	09		03	02		02		01	6
	Sunday	21	June	10		04	03		03		02	
	Monday	20	July	11		05	04		04		03	
	Wednesday	19	August	12		06	05		05		04	
	Thursday	17	September	01	4388	07	06		06		05	
	Saturday	17	October	02	(18)	08	07		07		06	
	Sunday	15	November	03		09	08		08		07	
	Tuesday	15	December	04		10	09		09		08	
628	Wednesday	13	January	05		11	10		10		09	
	Friday	12	February	06		12	11		11		10	
	Saturday	12	March	07		01	12		12		11	
	Monday	11	April	08		02	01	7	01	7	12	
	Tuesday	10	May	09		03	02		02		01	7
	Thursday	09	June	10		04	03		03		02	
	Friday	08	July	11		05	04		04		03	
	Sunday	07	August	12		06	05		05		04	
	Monday	05	September	01	4389	07	06		06		05	
	Wednesday	05	October	02	(19)	08	07		07		06	
	Thursday	03	November	03		09	08		08		07	
	Friday	02	December	04		10	09		09		08	
	Saturday	31	December	05		11	10		10		09	
629	Monday	30	January	06		12	11		11		10	
	Wednesday	01	March	veAdhâr			12		12		11	
	Thursday	30	March	07		01	Nasī'		Nasī'		12	
	Saturday	29	April	08		02	01	8	01	8	01	8
	Sunday	28	May	09		03	02		02		02	
	Tuesday	27	June	10		04	03		03		03	
	Wednesday	26	July	11		05	04		04		04	
	Friday	25	August	12		06	05		05		05	

CHRISTIAN				JEWISH			LUNI-SOLAR				HIĞRI	
				Secular		Religious	Hâshim Amir 'Alî		Perceval			
Year	Day	Date	Month	Month	Year	Month	Month	Year	Month	Year	Month	Year
	Saturday	23	September	01	4390	07	06		06		06	
	Monday	23	October	02	(1)	08	07		07		07	
	Wednesday	22	November	03		09	08		08		08	
	Friday	22	December	04		10	09		09		09	
630	Saturday	20	January	05		11	10		10		10	
	Monday	19	February	06		12	11		11		11	
	Tuesday	20	March	07		01	12		12		12	
	Thursday	19	April	08		02	01	9	01	9	01	9
	Friday	18	May	09		03	02		02		02	
	Sunday	17	June	10		04	03		03		03	
	Monday	16	July	11		05	04		04		04	
	Wednesday	15	August	12		06	05		05		05	
	Thursday	13	September	01	4391	07	06		06		06	
	Saturday	13	October	02	(2)	08	07		07		07	
	Sunday	11	November	03		09	08		08		08	
	Monday	11	December	04		10	09		09		09	
631	Wednesday	09	January	05		11	10		10		10	
	Friday	08	February	06		12	11		11		11	
	Saturday	09	March	07		01	12		12		12	
	Monday	08	April	08		02	01	10	01	10	01	10
	Tuesday	07	May	09		03	02		02		02	
	Thursday	06	June	10		04	03		03		03	
	Friday	05	July	11		05	04		04		04	
	Sunday	04	August	12		06	05		05		05	
	Monday	02	September	01	4392	07	06		06		06	
	Wednesday	02	October	02	(3)	08	07		07		07	
	Friday	01	November	03		09	08		08		08	
	Sunday	01	December	04		10	09		09		09	
	Monday	30	December	05		11	10		10		10	
632	Wednesday	29	January	06		12	11		11		11	
	Friday	28	February	veAdhâr			12		12		12	
	Saturday	28	March	07		01	01	11	01	11	01	11
	Monday	27	April	08		02	02		02		02	
	Sunday	26	May	09		03	03		03		03	
	Thursday	25	June	10		04	04		04		04	
	Friday	24	July	11		05	05		05		05	
	Sunday	23	August	12		06	06		06		06	
	Monday	21	September	01	4393	07	07		07		07	
	Wednesday	21	October	02	(4)	08	08		08		08	
	Thursday	19	November	03		09	09		09		09	

APPENDIX V : The Ğāhilīya and Hiğra Calendars[446]

Julian Date	Day	Cycle	Luni-Solar Calendar	Lunar Calendar	Muḥarram	Ṣafar	Rabi' I	Rabi' II	Gumada I	Gumada II	Rağab	Sa'ban	Ramaḍan	Sawwal	Ḏu al Qa'da	Ḏu al Ḥiğğa
500 April 16	Sunday		-122 Safar 01	-126 Muḥarram 01	5000416	5000516	5000614	5000714	5000813	5000912	5001011	5001110	5001209	5010107	5010206	5010307
501 March 07	Wednesday		Nāsī	-126 Ḏū al Ḥiğğa 01	5010307											
501 April 05	Thursday	04	-121 Muḥarram 01	-125 Muḥarram 01	5010405	5010505	5010603	5010703	5010802	5010901	5011001	5011030	5011129	5011228	5020126	5020225
502 March 26	Tuesday	05	-120 Muḥarram 01	-124 Muḥarram 01	5020326	5020424	5020524	5020622	5020722	5020821	5020920	5021019	5021118	5021218	5030116	5030214
503 March 16	Sunday	06e	-119 Muḥarram 01	-123 Muḥarram 01	5030316	5030414	5030513	5030612	5030711	5030810	5030909	5031008	5031107	5031207	5040105	5040204
504 March 05	Friday		Nāsī	-122 Muḥarram 01	5040305	5040403	5040502	5040531	5040630	5040729	5040828	5040926	5041026	5041125	5041224	5050123
504 April 03	Saturday	07	-118 Muḥarram 01	-122 Safar 01	5040403											
505 February 22	Tuesday		-118 Ḏū al Ḥiğğa 01	-121 Muḥarram 01	5050222	5050323	5050422	5050521	5050619	5050717	5050817	5050916	5051015	5051114	5051213	5060112
505 March 23	Wednesday	08e	-117 Muḥarram 01	-121 Safar 01	5050323											
506 February 11	Saturday		-117 Ḏū al Ḥiğğa 01	-120 Muḥarram 01	5060211	5060313	5060411	5060511	5060609	5060708	5060807	5060905	5061005	5061103	5061202	5070101
506 March 13	Monday		Nāsī	-120 Safar 01	5060313											
506 April 11	Tuesday	09	-116 Muḥarram 01	-120 Rabi' I 01	5060411											
507 January 31	Wednesday		-116 Ḏū al Qa'da 01	-119 Muḥarram 01	5070131	5070302	5070331	5070430	5070529	5070628	5070727	5070826	5070924	5071024	5071122	5071221
507 March 02	Friday	10	-115 Muḥarram 01	-119 Rabi' I 01	5070302											
508 January 20	Sunday		-115 Ḏū al Qa'da 01	-118 Muḥarram 01	5080120	5080219	5080319	5080418	5080518	5080616	5080716	5080814	5080913	5081012	5081111	5081210
508 March 19	Wednesday	11e	-114 Muḥarram 01	-118 Rabi' I 01	5080319											
509 January 08	Thursday		-114 Ḏū al Qa'da 01	-117 Muḥarram 01	5090108	5090207	5090309	5090407	5090507	5090605	5090705	5090804	5090902	5091002	5091031	5091130
509 March 09	Monday		Nāsī	-117 Rabi' I 01	5090309											
509 April 07	Tuesday	12	-113 Muḥarram 01	-117 Rabi' II 01	5090407											
509 December 29	Tuesday		-113 Šawwāl 01	-116 Muḥarram 01	5091229	5100128	5100226	5100327	5100426	5100525	5100624	5100724	5100822	5100921	5101021	5101119
510 March 27	Saturday	13	-112 Muḥarram 01	-116 Rabi' II 01	5100327											
510 December 19	Sunday		-112 Šawwāl 01	-115 Muḥarram 01	5101219	5110117	5110216	5110317	5110415	5110515	5110613	5110713	5110811	5110910	5111010	5111109
511 March 17	Thursday	14e	-111 Muḥarram 01	-115 Rabi' II 01	5110317											
511 December 08	Thursday		-111 Šawwāl 01	-114 Muḥarram 01	5111208	5120107	5120205	5120306	5120404	5120503	5120602	5120701	5120730	5120829	5120928	5121028
512 March 06	Tuesday		Nāsī	-114 Rabi' II 01	5120306											

[446] The table gives the Julian date and day name for the beginning of the Lunar and Luni-solar years, as well as the corresponding month in the other calendar. The additional month is also included under the name Nāsī. The cycle column shows the nineteen-year cycle with the embolismic years marked with an "e". The beginning date for all the months of the lunar calendar are included in the table.

Julian Date	Day	Cycle	Luni-Solar Calendar	Lunar Calendar	Muḥarram	Ṣafar	Rabiʿ I	Rabiʿ II	Gumada I	Gumada II	Rağab	Saʿban	Ramaḍan	Sawwāl	Du al Qaʿda	Du al Ḥiğğa
512 April 04	Wednesday	15	-110 Muḥarram 01	-114 Ğumādā I 01	5120404											
512 November 27	Tuesday		-110 Ramaḍān 01	-113 Muḥarram 01	5121127	5121226	5130125	5130223	5130325	5130423	5130522	5130621	5130720	5130818	5130917	5131017
513 March 25	Monday	16	-109 Muḥarram 01	-113 Ğumādā I 01	5130325											
513 November 16	Saturday		-109 Ramaḍān 01	-112 Muḥarram 01	5131116	5131215	5140114	5140213	5140314	5140413	5140512	5141610	5140709	5140808	5140907	5141006
514 March 14	Friday	17c	-108 Muḥarram 01	-112 Ğumādā I 01	5140314											
514 November 05	Wednesday		-108 Ramaḍān 01	-111 Muḥarram 01	5141105	5141204	5150103	5150202	5150303	5150402	5150502	5150531	5150629	5150729	5150827	5150925
515 March 03	Tuesday		Nāsī	-111 Ğumādā I 01	5150303											
515 April 02	Thursday	18	-107 Muḥarram 01	-111 Ğumādā II 01	5150402											
515 October 25	Sunday		-107 Šaʿbān 01	-110 Muḥarram 01	5151025	5151124	5151223	5160122	5160220	5160321	5160420	5160519	5160618	5160717	5160816	5160914
516 March 21	Monday	19e	-106 Muḥarram 01	-110 Ğumādā II 01	5160321											
516 October 14	Friday		-106 Šaʿbān 01	-109 Muḥarram 01	5161014	5161113	5161212	5170110	5170209	5170310	5170409	5170508	5170607	5170707	5170805	5170904
517 March 10	Friday		Nāsī	-109 Ğumādā II 01	5170310											
517 April 09	Sunday	01	-105 Muḥarram 01	-109 Rağab 01	5170409											
517 October 04	Wednesday		-105 Rağab 01	-108 Muḥarram 01	5171004	5171102	5171201	5171229	5180129	5180227	5180329	5180427	5180527	5180626	5180725	5180824
518 March 29	Thursday	02	-104 Muḥarram 01	-108 Rağab 01	5180329											
518 September 23	Sunday		-104 Rağab 01	-107 Muḥarram 01	5180923	5181023	5181121	5181220	5190119	5190217	5190318	5190417	5190516	5191615	5190714	5190813
519 March 18		03e	-103 Muḥarram 01	-107 Rağab 01	5190318											
519 September 12	Thursday		-103 Rağab 01	-106 Muḥarram 01	5190912	5191012	5191111	5191210	5200108	5200207	5200307	5200405	5200505	5200603	5200703	5200801
520 March 07	Saturday		Nāsī	-106 Rağab 01	5200307											
520 April 05	Sunday	04	-102 Muḥarram 01	-106 Šaʿbān 01	5200405											
520 August 31	Monday		-102 Ğumādā II 01	-105 Muḥarram 01	5200831	5200930	5201030	5201128	5201228	5210126	5210225	5210326	5210424	5210524	5210622	5210721
521 March 26	Friday	05	-101 Muḥarram 01	-105 Šaʿbān 01	5210326											
521 August 20	Friday		-101 Ğumādā II 01	-104 Muḥarram 01	5210820	5210919	5211019	5211117	5211217	5220116	5220214	5220316	5220414	5220513	5220612	5220711
522 March 16	Wednesday	06e	-100 Muḥarram 01	-104 Šaʿbān 01	5220316											
522 August 10	Wednesday		-100 Ğumādā II 01	-103 Muḥarram 01	5220810	5220908	5221008	5221106	5221206	5230105	5230203	5230305	5230404	5230503	5230601	5230701
523 March 05	Sunday		Nāsī	-103 Šaʿbān 01	5230305											
523 April 04	Tuesday	07	-99 Muḥarram 01	-103 Ramaḍān 01	5230404											
523 July 30	Sunday		-99 Ğumādā I 01	-102 Muḥarram 01	5230730	5230829	5230927	5231027	5231125	5231225	5240123	5240222	5240323	5240421	5240521	5240619
524 March 23	Saturday	08e	-98 Muḥarram 01	-102 Ramaḍān 01	5240328											
524 July 19	Friday		-98 Ğumādā I 01	-101 Muḥarram 01	5240719	5240817	5240916	5241015	5241113	5241213	5250111	5250210	5250312	5250411	5250510	5250609
525 March 12	Wednesday		Nāsī	-101 Ramaḍān 01	5250312											
525 April 11	Friday	09	-97 Muḥarram 01	-101 Šawwāl 01	5250411											
525 July 08	Tuesday		-97 Rabiʿ II 01	-100 Muḥarram 01	5250708	5250807	5250905	5251005	5251103	5251202	5260101	5260130	5260301	5260331	5260429	5260529
526 March 31	Tuesday	10	-96 Muḥarram 01	-100 Šawwāl 01	5260331											
526 June 28	Sunday		-96 Rabiʿ II 01	-99 Muḥarram 01	5260628	5260727	5260826	5260924	5261024	5261122	5261221	5270120	5270218	5270320	5270418	5270518
527 March 20	Saturday	11c	-95 Muḥarram 01	-99 Šawwāl 01	5270320											
527 June 17	Thursday		-95 Rabiʿ II 01	-98 Muḥarram 01	5270617	5270716	5270815	5270914	5271013	5271112	5271211	5280109	5280208	5280309	5280407	5280506
528 March 09	Thursday		Nāsī	-98 Šawwāl 01	5280309											
528 April 07	Friday	12	-94 Muḥarram 01	-98 Ḏū al Qaʿda 01	5280407											
528 June 05	Monday		-94 Rabiʿ I 01	-97 Muḥarram 01	5280605	5280704	5280803	5280902	5281001	5281031	5281130	5281229	5290128	5290226	5290327	5290426

Julian Date	Day	Cycle	Luni-Solar Calendar	Lunar Calendar	Muḥarram	Ṣafar	Rabīʿ I	Rabīʿ II	Gumada I	Gumada II	Rağab	Šaʿban	Ramaḍan	Sawwāl	Ḏū al Qaʿda	Ḏū al Ḥiğğa
529 March 27	Tuesday	13	-93 Muḥarram 01	-97 Ḏū al Qaʿda 01	5290327											
529 May 25	Friday		-93 Rabīʿ I 01	-96 Muḥarram 01	5290525	5290623	5290723	5290822	5290920	5291020	5291119	5291219	5300117	5300216	5300317	5300415
530 March 17	Sunday	14e	-92 Muḥarram 01	-96 Ḏū al Qaʿda 01	5300317											
530 May 15	Wednesday		-92 Rabīʿ I 01	-95 Muḥarram 01	5300515	5300613	5300712	5300811	5300910	5301009	5301108	5301208	5310107	5310205	5310307	5310405
531 March 07	Friday		Nāsī	-95 Ḏū al Qaʿda 01	5310307											
531 April 05	Saturday	15	-91 Muḥarram 01	-95 Ḏū al Ḥiğğa 01	5310405											
531 May 04	Sunday		-91 Safar 01	-94 Muḥarram 01	5310504	5310603	5310702	5310731	5310830	5310928	5311028	5311127	5311227	5320125	5320224	5320324
532 March 24	Wednesday	16	-90 Muḥarram 01	-94 Ḏū al Ḥiğğa 01	5320324											
532 April 23	Friday		-90 Safar 01	-93 Muḥarram 01	5320423	5320522	5320621	5320720	5320818	5320917	5321016	5321115	5321215	5330113	5330212	5330314
533 March 14	Monday	17e	-89 Muḥarram 01	-93 Ḏū al Ḥiğğa 01	5330314											
533 April 12	Tuesday		-89 Safar 01	-92 Muḥarram 01	5330412	5330512	5330610	5330710	5330808	5330907	5331006	5331105	5331204	5340103	5340201	5340303
534 March 03	Friday		Nāsī	-92 Ḏū al Ḥiğğa 01	5340303											
534 April 01	Saturday	18	-88 Muḥarram 01	-91 Muḥarram 01	5340401	5340501	5340531	5340629	5340728	5340827	5340926	5341025	5341124	5341223	5350121	5350220
535 March 21	Wednesday	19e	-87 Muḥarram 01	-90 Muḥarram 01	5350321	5350420	5350520	5350618	5350718	5350816	5350915	5351015	5351114	5351213	5360111	5360209
536 March 10	Monday		Nāsī	-89 Muḥarram 01	5360310	5360408	5360508	5360606	5360706	5360805	5360904	5361004	5361102	5361202	5361231	5370129
536 April 08	Tuesday	01	-86 Muḥarram 01	-89 Safar 01	5360408											
537 February 27	Friday		-86 Ḏū al Ḥiğğa 01	-88 Muḥarram 01	5370227	5370329	5370427	5370526	5370625	5370725	5370824	5370923	5371023	5371121	5371220	5380119
537 March 29	Sunday	02	-85 Muḥarram 01	-88 Safar 01	5370329											
538 February 17	Wednesday		-85 Ḏū al Ḥiğğa 01	-87 Muḥarram 01	5380217	5380318	5380417	5380516	5380614	5380714	5380813	5380912	5381012	5381110	5381210	5390108
538 March 18	Thursday	03e	-84 Muḥarram 01	-87 Safar 01	5380318											
539 February 07	Monday		-84 Ḏū al Ḥiğğa 01	-86 Muḥarram 01	5390207	5390308	5390406	5390506	5390604	5390703	5390802	5390901	5391001	5391030	5391129	5391229
539 April 06	Wednesday		Nāsī	-86 Safar 01	5390406											
539 May 06	Friday	04	-83 Muḥarram 01	-86 Rabīʿ I 01	5390506											
540 January 27	Friday		-83 Ḏū al Qaʿda 01	-85 Muḥarram 01	5400127	5400225	5400326	5400424	5400524	5400622	5400721	5400820	5400919	5401018	5401117	5401216
540 March 26	Monday	05	-82 Muḥarram 01	-85 Rabīʿ I 01	5400326											
541 January 15	Tuesday		-82 Ḏū al Qaʿda 01	-84 Muḥarram 01	5410115	5410214	5410315	5410414	5410513	5410612	5410711	5410809	5410908	5411008	5411106	5411205
541 March 15	Friday	06e	-81 Muḥarram 01	-84 Rabīʿ I 01	5410315											
542 January 04	Saturday		-81 Ḏū al Qaʿda 01	-83 Muḥarram 01	5420104	5420203	5420305	5420403	5420503	5420601	5420701	5420730	5420829	5420927	5421026	5421125
542 February 03	Monday		Nāsī	-83 Rabīʿ I 01	5420203											
542 March 05	Wednesday	07	-80 Muḥarram 01	-83 Rabīʿ II 01	5420305											
542 December 24	Wednesday		-80 Šawwāl 01	-82 Muḥarram 01	5421224	5430123	5430221	5430323	5430422	5430521	5430620	5430720	5430818	5430917	5431016	5431114
543 March 23	Monday	08e	-79 Muḥarram 01	-82 Rabīʿ II 01	5430323											
543 December 14	Monday		-79 Šawwāl 01	-81 Muḥarram 01	5431214	5440112	5440211	5440311	5440410	5440510	5440608	5440708	5440806	5440905	5441005	5441103
544 March 11	Friday		Nāsī	-81 Rabīʿ II 01	5440311											
544 April 10	Sunday	09	-78 Muḥarram 01	-81 Ǧumādā I 01	5440410											
544 December 02	Friday		-78 Ramaḍān 01	-80 Muḥarram 01	5441202	5450101	5450130	5450301	5450330	5450429	5450528	5450627	5450727	5450825	5450924	5451023
545 March 30	Thursday	10	-77 Muḥarram 01	-80 Ǧumādā I 01	5450330											
545 November 22	Wednesday		-77 Ramaḍān 01	-79 Muḥarram 01	5451122	5451221	5460120	5460218	5460320	5460418	5460517	5460616	5460716	5460814	5460913	5461013
546 March 20	Tuesday	11e	-76 Muḥarram 01	-79 Ǧumādā I 01	5460320											
546 November 11	Sunday		-76 Ramaḍān 01	-78 Muḥarram 01	5461111	5461211	5470109	5470208	5470310	5470408	5470507	5470605	5470705	5470803	5470903	5471002

Julian Date	Day	Cycle	Luni-Solar Calendar	Lunar Calendar	Muḥarram	Ṣafar	Rabīʿ I	Rabīʿ II	Ǧumada I	Ǧumada II	Rağab	Šaʿbān	Ramaḍan	Šawwal	Ḏu al Qaʿda	Ḏu al Ḥiǧǧa
547 March 10	Sunday		Nāsī	-78 Ǧumādā I 01	5470310											
547 April 08	Monday	12	-75 Muḥarram 01	-78 Ǧumādā II 01	5470408											
547 October 31	Thursday		-75 Šaʿbān 01	-77 Muḥarram 01	5471031	5471130	5471230	5480129	5480228	5480327	5480426	5480525	5480623	5480723	5480821	5480920
548 March 27	Friday	13	-74 Muḥarram 01	-77 Ǧumādā II 01	5480327											
548 October 19	Monday		-74 Šaʿbān 01	-76 Muḥarram 01	5481019	5481118	5481218	5490117	5490215	5490317	5490415	5490515	5490613	5490712	5490810	5490910
549 March 17	Wednesday	14e	-73 Muḥarram 01	-76 Ǧumādā II 01	5490317											
549 October 09	Saturday		-73 Šaʿbān 01	-75 Muḥarram 01	5491009	5491107	5491207	5500106	5500205	5500307	5500405	5500504	5500603	5500702	5500731	5500829
550 March 07	Monday		Nāsī	-75 Ǧumādā II 01	5500307											
550 April 05	Tuesday	15	-72 Muḥarram 01	-75 Rağab 01	5500405											
550 September 28	Wednesday		-72 Rağab 01	-74 Muḥarram 01	5500928	5501028	5501126	5501226	5510125	5510223	5510325	5510424	5510523	5510622	5510721	5510819
551 March 25	Saturday	16	-71 Muḥarram 01	-74 Rağab 01	5510325											
551 September 18	Monday		-71 Rağab 01	-73 Muḥarram 01	5510918	5511017	5511116	5511215	5520114	5520212	5520313	5520412	5520511	5520610	5520709	5520808
552 March 13	Wednesday	17e	-70 Muḥarram 01	-73 Rağab 01	5520313											
552 September 07	Saturday		-70 Rağab 01	-72 Muḥarram 01	5520907	5521006	5521105	5521204	5530102	5530201	5530302	5530401	5530430	5530530	5530628	5530728
553 March 02	Sunday		Nāsī	-72 Rağab 01	5530302											
553 April 01	Tuesday	18	-69 Muḥarram 01	-72 Šaʿbān 01	5530401											
553 August 27	Wednesday		-69 Ǧumādā II	-71 Muḥarram 01	5530827	5530926	5531025	5531124	5531223	5540121	5540220	5540321	5540419	5540519	5540618	5540717
554 March 21	Saturday	19e	-68 Muḥarram 01	-71 Šaʿbān 01	5540321											
554 August 16	Sunday		-68 Ǧumādā II 01	-70 Muḥarram 01	5540816	5540915	5541015	5541114	5541213	5550111	5550209	5550311	5550409	5550508	5550607	5550706
555 March 11	Thursday		Nāsī	-70 Šaʿbān 01	5550311											
555 April 09	Friday	01	-67 Muḥarram 01	-70 Ramaḍān 01	5550409											
555 August 05	Thursday		-67 Ǧumādā I 01	-69 Muḥarram 01	5550805	5550904	5551004	5551103	5551202	5560101	5560130	5560229	5560329	5560427	5560526	5560625
556 March 29	Wednesday	02	-66 Muḥarram 01	-69 Ramaḍān 01	5560329											
556 July 24	Monday		-66 Ǧumādā I 01	-68 Muḥarram 01	5560724	5560823	5560922	5561022	5561121	5561220	5570118	5570217	5570318	5570417	5570516	5570614
557 March 18	Sunday	03e	-65 Muḥarram 01	-68 Ramaḍān 01	5570318											
557 July 14	Saturday		-65 Ǧumādā I 01	-67 Muḥarram 01	5570714	5570812	5570911	5571011	5571110	5571209	5580108	5580206	5580308	5580406	5580506	5580604
558 March 08	Friday		Nāsī	-67 Ramaḍān 01	5580308											
558 April 06	Saturday	04	-64 Muḥarram 01	-67 Šawwāl 01	5580406											
558 July 03	Wednesday		-64 Rabiʿ II 01	-66 Muḥarram 01	5580703	5580802	5580901	5580930	5581030	5581128	5581228	5590126	5590226	5590327	5590425	5590525
559 March 27	Thursday	05	-63 Muḥarram 01	-66 Šawwāl 01	5590327											
559 June 23	Monday		-63 Rabiʿ II 01	-65 Muḥarram 01	5590623	5590722	5590821	5590919	5591019	5591117	5591217	5600115	5600214	5600315	5600413	5600513
560 March 15	Monday	06e	-62 Muḥarram 01	-65 Šawwāl 01	5600315											
560 June 12	Saturday		-62 Rabiʿ II 01	-64 Muḥarram 01	5600612	5600711	5600810	5600908	5601007	5601106	5601205	5610103	5610202	5610304	5610402	5610502
561 March 04	Friday		Nāsī	-64 Šawwāl 01	5610304											
561 April 02	Saturday	07	-61 Muḥarram 01	-64 Ḏū al Qaʿda 01	5610402											
561 June 01	Wednesday		-61 Rabiʿ I 01	-63 Muḥarram 01	5610601	5610630	5610730	5610829	5610927	5611026	5611125	5611224	5620122	5620221	5620323	5620421
562 February 21	Tuesday	08e	-60 Muḥarram 01	-63 Ḏū al Qaʿda 01	5620323											
562 May 21	Sunday		-60 Rabiʿ I 01	-62 Muḥarram 01	5620521	5620619	5620719	5620818	5620917	5621016	5621114	5621214	5630112	5630210	5630312	5630410
563 March 12	Monday		Nāsī	-62 Ḏū al Qaʿda 01	5630312											
563 April 10	Tuesday	09	-59 Muḥarram 01	-62 Ḏū al Ḥiǧǧa 01	5630410											

Julian Date	Day	Cycle	Luni-Solar Calendar	Lunar Calendar	Muḥarram	Ṣafar	Rabī‘ I	Rabī‘ II	Gumādā I	Gumada II	Rağab	Sa‘bān	Ramaḍan	Sawwal	Du al Qa‘da	Ḍū al Ḥiğğa
563 May 10	Thursday		-59 Safar 01	-61 Muḥarram 01	5630510	5630608	5630708	5630807	5630906	5631005	5631104	5631203	5640102	5640131	5640301	5640330
564 March 30	Sunday	10	-58 Muḥarram 01	-61 Ḍū al Ḥiğğa 01	5640330											
564 April 28	Monday		-58 Safar 01	-60 Muḥarram 01	5640428	5640528	5640626	5640726	5640825	5640923	5641023	5641122	5641221	5650120	5650218	5650320
565 February 18	Wednesday	11e	-57 Muḥarram 01	-60 Ḍū al Ḥiğğa 01	5650320											
565 April 18	Saturday		-57 Safar 01	-59 Muḥarram 01	5650418	5650517	5650616	5650715	5650814	5650913	5651012	5651111	5651211	5660109	5660208	5660310
566 March 10	Wednesday		Nāsī	-59 Ḍū al Ḥiğğa 01	5660310											
566 April 08	Thursday	12	-56 Muḥarram 01	-58 Muḥarram 01	5660408	5660507	5660605	5660705	5660803	5660901	5661001	5661031	5661130	5661229	5670128	5670228
567 March 28	Monday	13	-55 Muḥarram 01	-57 Muḥarram 01	5670328	5670427	5670526	5670624	5670724	5670822	5670920	5671020	5671119	5671219	5680117	5680216
568 March 17	Saturday	14e	-54 Muḥarram 01	-56 Muḥarram 01	5680317	5680415	5680515	5680613	5680712	5680810	5680910	5681008	5681107	5681207	5690105	5690204
569 March 07	Thursday		Nāsī	-55 Muḥarram 01	5690307	5690404	5690504	5690602	5690702	5690731	5690831	5690928	5691028	5691126	5691226	5700124
569 April 04	Thursday	15	-53 Muḥarram 01	-55 Safar 01	5690404											
570 February 23	Sunday		-53 Ḍū al Ḥiğğa 01	-54 Muḥarram 01	5700223	5700324	5700423	5700523	5700621	5700721	5700819	5700918	5701017	5701116	5701215	5710114
570 March 24	Monday	16	-52 Muḥarram 01	-54 Safar 01	5700324											
571 February 12	Thursday		-52 Ḍū al Ḥiğğa 01	-53 Muḥarram 01	5710212	5710314	5710412	5710512	5710610	5710710	5710808	5710908	5711007	5711106	5711205	5720103
571 March 14	Saturday	17e	-51 Muḥarram 01	-53 Safar 01	5710314											
572 February 02	Tuesday		-51 Ḍū al Ḥiğğa 01	-52 Muḥarram 01	5720202	5720302	5720331	5710430	5720529	5720628	5720727	5720826	5720925	5721025	5721124	5721223
572 March 02	Wednesday		Nāsī	-52 Safar 01	5720302											
572 March 31	Thursday	18	-50 Muḥarram 01	-52 Rabī‘ I 01	5720331											
573 January 21	Saturday		-50 Ḍū al Qa‘da 01	-51 Muḥarram 01	5730121	5730220	5730321	5730419	5730519	5730617	5730717	5730815	5730914	5731015	5731113	5731213
573 March 21	Tuesday	19e	-49 Muḥarram 01	-51 Rabī‘ I 01	5730321											
574 January 11	Thursday		-49 Ḍū al Qa‘da 01	-50 Muḥarram 01	5740111	5740209	5740311	5740409	5740508	5790606	5740708	5740804	5740904	5741003	5741102	5741202
574 March 11	Sunday		Nāsī	-50 Rabī‘ I 01	5740311											
574 April 09	Monday	01	-48 Muḥarram 01	-50 Rabī‘ II 01	5740409											
574 December 31	Monday		-48 Šawwāl 01	-49 Muḥarram 01	5741231	5750130	5750301	5750330	5750428	5750527	5750625	5750725	5750824	5750922	5751022	5751121
575 March 30	Saturday	02	-47 Muḥarram 01	-49 Rabī‘ II 01	5750330											
575 December 20	Friday		-47 Šawwāl 01	-48 Muḥarram 01	5751220	5760119	5760218	5760318	5760417	5760516	5760614	5760714	5760812	5760911	5761010	5761109
576 March 18	Wednesday	03e	-46 Muḥarram 01	-48 Rabī‘ II 01	5760318											
576 December 08	Tuesday		-46 Šawwāl 01	-47 Muḥarram 01	5761208	5770107	5770208	5770308	5770406	5770505	5770604	5770703	5770802	5770901	5770930	5771029
577 March 08	Monday		Nāsī	-47 Rabī‘ II 01	5770308											
577 April 06	Tuesday	04	-45 Muḥarram 01	-47 Ğumādā I 01	5770406											
577 November 28	Sunday		-45 Ramaḍān 01	-46 Muḥarram 01	5771128	5771227	5780126	5780225	5780326	5780425	5780524	5780623	5780722	5780821	5780919	5781019
578 March 26	Saturday	05	-44 Muḥarram 01	-46 Ğumādā I 01	5780326											
578 November 17	Thursday		-44 Ramaḍān 01	-45 Muḥarram 01	5781117	5781216	5790115	5790213	5790315	5790414	5790513	5790612	5790712	5790810	5790909	5791008
579 March 15	Wednesday	06e	-43 Muḥarram 01	-45 Ğumādā I 01	5790315											
579 November 07	Tuesday		-43 Ramaḍān 01	-44 Muḥarram 01	5791107	5791206	5800104	5800203	5800304	5800402	5800501	5800531	5800630	5800730	5800829	5800927
580 March 04	Monday		Nāsī	-44 Ğumādā I 01	5800304											
580 April 02	Tuesday	07	-42 Muḥarram 01	-44 Ğumādā II 01	5800402											
580 October 26	Saturday		-42 Ša‘bān 01	-43 Muḥarram 01	5801026	5801125	5801224	5810122	5810222	5810322	5810421	5810520	5810619	5810719	5810817	5810916
581 March 22	Saturday	08e	-41 Muḥarram 01	-43 Ğumādā II 01	5810322											
581 October 16	Thursday		-41 Ša‘bān 01	-42 Muḥarram 01	5811016	5811114	5811214	5820112	5820210	5820312	5820410	5820510	5820608	5820708	5820806	5820905

Julian Date	Day	Cycle	Luni-Solar Calendar	Lunar Calendar	Muḥarram	Ṣafar	Rabiʿ I	Rabiʿ II	Gumādā I	Gumada II	Rağab	Šaʿban	Ramaḍān	Sawwal	Du al Qaʿda	Du al Ḥiğğa
582 March 12	Thursday		Nāsī	-42 Ğumādā II 01	5820312											
582 April 10	Friday	09	-40 Muḥarram 01	-42 Rağab 01	5820410											
582 October 05	Monday		-40 Šaʿbān 01	-41 Muḥarram 01	5821005	5821103	5821203	5830102	5830131	5830302	5830331	5830429	5830529	5830627	5830726	5830825
583 March 31	Wednesday	10	-39 Muḥarram 01	-41 Rağab 01	5830331											
583 September 24	Friday		-39 Rağab 01	-40 Muḥarram 01	5830924	5831023	5831122	5831222	5840121	5840219	5840320	5840418	5840517	5840616	5840715	5840813
584 March 20	Monday	11e	-38 Muḥarram 01	-40 Rağab 01	5840320											
584 September 12	Tuesday		-38 Rağab 01	-39 Muḥarram 01	5840912	5841011	5841110	5841210	5850109	5850207	5850310	5850407	5850507	5850605	5850705	5850803
585 March 10	Saturday		Nāsī	-39 Rağab 01	5850310											
585 April 07	Saturday	12	-37 Muḥarram 01	-39 Šaʿbān 01	5850407											
585 September 01	Saturday		-37 Rağab 01	-38 Muḥarram 01	5850901	5851001	5851030	5851129	5851229	5860128	5860226	5860328	5860426	5860526	5850624	5860724
586 March 28	Thursday	13	-36 Muḥarram 01	-38 Šaʿbān 01	5860328											
586 August 22	Thursday		-36 Ğumādā II 01	-37 Muḥarram 01	5860822	5860920	5861020	5861118	5861218	5870117	5870215	5870317	5870416	5870515	5870614	5870713
587 March 17	Monday	14e	-35 Muḥarram 01	-37 Šaʿbān 01	5870317											
587 August 11	Monday		-35 Ğumādā II 01	-36 Muḥarram 01	5870811	5870911	5871009	5871108	5871208	5880106	5880204	5880306	5880404	5880503	5880602	5880701
588 March 06	Saturday		Nāsī	-36 Šaʿbān 01	5880306											
588 April 04	Sunday	15	-34 Muḥarram 01	-36 Ramaḍān 01	5880404											
588 July 31	Saturday		-34 Ğumādā II 01	-35 Muḥarram 01	5880731	5880829	5880928	5881028	5881126	5881226	5890124	5890222	5890324	5890422	5890522	5890620
589 March 24	Thursday	16	-33 Muḥarram 01	-35 Ramaḍān 01	5890324											
589 July 20	Wednesday		-33 Ğumādā I 01	-34 Muḥarram 01	5890720	5890819	5890918	5891017	5891116	5891215	5900114	5900212	5900313	5900412	5900511	5900610
590 March 13	Monday	17e	-32 Muḥarram 01	-34 Ramaḍān 01	5900313											
590 July 09	Sunday		-32 Ğumādā I 01	-33 Muḥarram 01	5900709	5900808	5900907	5901007	5901106	5901205	5910103	5910202	5910303	5910401	5910501	5910530
591 March 03	Saturday		Nāsī	-33 Ramaḍān 01	5910303											
591 April 01	Sunday	18	-31 Muḥarram 01	-33 Šawwāl 01	5910401											
591 June 28	Thursday		-31 Rabīʿ II 01	-32 Muḥarram 01	5910628	5910728	5910827	5910926	5911026	5911125	5911224	5920122	5920221	5920321	5920419	5920519
592 March 21	Friday	19e	-30 Muḥarram 01	-32 Šawwāl 01	5920321											
592 June 17	Tuesday		-30 Rabīʿ II 01	-31 Muḥarram 01	5920617	5920716	5920815	5920914	5921014	5921113	5921212	5930111	5930209	5930311	5930409	5930508
593 March 11	Wednesday		Nāsī	-31 Šawwāl 01	5930311											
593 April 09	Thursday	01	-29 Muḥarram 01	-31 Ḏū al Qaʿda 01	5930409											
593 June 06	Saturday		-29 Rabīʿ II 01	-30 Muḥarram 01	5930606	5930706	5930804	5930903	5931003	5931102	5931201	5931231	5940129	5940228	5940329	5940428
594 March 29	Monday	02	-28 Muḥarram 01	-30 Ḏū al Qaʿda 01	5940329											
594 May 27	Thursday		-28 Rabīʿ I 01	-29 Muḥarram 01	5940527	5940626	5940725	5940823	5940922	5941022	5941120	5941220	5950118	5950217	5950319	5950417
595 March 19	Saturday	03e	-27 Muḥarram 01	-29 Ḏū al Qaʿda 01	5950319											
595 May 17	Tuesday		-27 Rabīʿ I 01	-28 Muḥarram 01	5950517	5950615	5950715	5950813	5950912	5951011	5951110	5951209	5960107	5960206	5960307	5960405
596 March 07	Wednesday		Nāsī	-28 Ḏū al Qaʿda 01	5960307											
596 April 05	Thursday	04	-26 Muḥarram 01	-28 Ḏū al Ḥiğğa 01	5960405											
596 May 05	Saturday		-26 Safar 01	-27 Muḥarram 01	5960505	5960604	5960703	5960802	5960901	5960930	5961029	5961127	5961227	5970125	5970224	5970325
597 March 25	Monday	05	-25 Muḥarram 01	-27 Ḏū al Ḥiğğa 01	5970325											
597 April 24	Wednesday		-25 Safar 01	-26 Muḥarram 01	5970424	5970524	5970622	5970722	5970821	5970919	5971019	5971117	5971216	5980115	5980213	5980315
598 March 15	Saturday	06e	-24 Muḥarram 01	-26 Ḏū al Ḥiğğa 01	5980315											
598 April 13	Sunday		-24 Safar 01	-25 Muḥarram 01	5980413	5980513	5980611	5980711	5980810	5980909	5981008	5981107	5981206	5990104	5990203	5990305

Julian Date	Day	Cycle	Luni-Solar Calendar	Lunar Calendar	Muḥarram	Ṣafar	Rabīʿ I	Rabīʿ II	Gumada I	Gumada II	Rağab	Šaʿban	Ramaḍan	Šawwal	Ḏū al Qaʿda	Ḏu al Ḥiğğa
599 March 05	Thursday		Nāsī	-25 Ḏū al Ḥiğğa 01	5990305											
599 April 03	Friday	07	-23 Muḥarram 01	-24 Muḥarram 01	5990403	5990502	5990531	5990630	5990730	5990829	5990927	5991027	5991125	5991225	6000123	6000222
600 March 22	Tuesday	08e	-22 Muḥarram 01	-23 Muḥarram 01	6000322	6000421	6000520	6000618	6000718	6000817	6000915	6001015	6001114	6001213	6010112	6010210
601 March 12	Sunday		Nāsī	-22 Muḥarram 01	6010312	6010410	6010510	6010608	6010707	6010806	6010904	6011004	6011103	6011202	6020101	6020131
601 April 10	Monday	09	-21Muḥarram 01	-22 Safar 01	6010410											
602 March 01	Thursday		-21 Ḏū al Ḥiğğa 01	-21 Muḥarram 01	6020301	6020331	6020429	6020529	6020627	6020726	6020825	6020923	6021023	6021121	6021221	6030120
602 March 31	Saturday	10	-20 Muḥarram 01	-21 Safar 01	6020331											
603 February 19	Tuesday		-20 Ḏū al Ḥiğğa 01	-20 Muḥarram 01	6030219	6030320	6030419	6030518	6030617	6030716	6030814	6030913	6031012	6031111	6031210	6040109
603 March 20	Wednesday	11e	-19 Muḥarram 01	-20 Safar 01	6030320											
604 February 08	Saturday		-19 Ḏū al Ḥiğğa 01	-19 Muḥarram 01	6040208	6040309	6040407	6040507	6040605	6040705	6040803	6040901	6041001	6041030	6041129	6041228
604 March 09	Monday		Nāsī	-19 Safar 01	6040309											
604 April 07	Tuesday	12	-18 Muḥarram 01	-19 Rabīʿ I 01	6040407											
605 January 27	Wednesday		-18 Ḏū al Qaʿda	-18 Muḥarram 01	6050127	6050225	6050327	6050426	6050525	6050624	6050723	6050822	6050920	6051020	6051118	6051218
605 March 27	Saturday	13	-17 Muḥarram 01	-18 Rabīʿ I 01	6050327											
606 January 16	Sunday		-17 Ḏū al Qaʿda	-17 Muḥarram 01	6060116	6060215	6060316	6060415	6060514	6060613	6060713	6060811	6060911	6061009	6061108	6061208
606 March 16	Wednesday	14e	-16 Muḥarram 01	-17 Rabīʿ I 01	6060316											
607 January 06	Friday		-16 Ḏū al Qaʿda	-16 Muḥarram 01	6070106	6070204	6070306	6070404	6070504	6070602	6070702	6070731	6070830	6070929	6071029	6071127
607 March 06	Monday		Nāsī	-16 Rabīʿ I 01	6070306											
607 April 04	Tuesday	15	-15 Muḥarram 01	-16 Rabīʿ II 01	6070404											
607 December 27	Wednesday		-15 Šawwāl 01	-15 Muḥarram 01	6071227	6080125	6080223	6080324	6080422	6080521	6080620	6080719	6080918	6080917	6081017	6081116
608 March 24	Sunday	16	-14 Muḥarram 01	-15 Rabīʿ II 01	6080324											
608 December 15	Sunday		-14 Šawwāl 01	-14 Muḥarram 01	6081215	6090114	6090212	6090313	6090412	6090511	6090609	6090709	6090807	6090906	6091006	6091105
609 March 13	Thursday	17e	-13 Muḥarram 01	-14 Rabīʿ II 01	6090313											
609 December 05	Friday		-13 Šawwāl 01	-13 Muḥarram 01	6091205	6100103	6100201	6100303	6100401	6100501	6100530	6100628	6100727	6100826	6100925	6101025
610 March 03	Tuesday		Nāsī	-13 Rabīʿ II 01	6100303											
610 April 01	Wednesday	18	-12 Muḥarram 01	-13 Ǧumādā I 01	6100401											
610 November 24	Tuesday		-12 Ramaḍān 01	-12 Muḥarram 01	6101124	6101223	6110122	6110220	6110322	6110420	6110520	6110618	6110717	6110816	6110914	6111014
611 March 22	Monday	19e	-11 Muḥarram 01	-12 Ǧumādā I 01	6110322											
611 November 13	Saturday		-11 Ramaḍān 01	-11 Muḥarram 01	6111113	6111212	6120111	6120210	6120310	6120409	6120508	6120606	6120706	6120804	6120903	6121003
612 March 10	Friday		Nāsī	-11 Ǧumādā I 01	6120310											
612 April 09	Sunday	01	-10 Muḥarram 01	-11 Ǧumādā II 01	6120409											
612 November 01	Wednesday		-10 Šaʿbān 01	-10 Muḥarram 01	6121101	6121201	6121231	6130128	6130228	6130329	6130428	6130527	6130625	6130725	6130824	6130922
613 March 29	Thursday	02	-9 Muḥarram 01	-10 Ǧumādā II 01	6130329											
613 October 22	Monday		-9 Šaʿbān 01	-9 Muḥarram 01	6131022	6131120	6131219	6140118	6140216	6140318	6140417	6140516	6140615	6140714	6140813	6140912
614 March 18	Monday	03e	-8 Muḥarram 01	-9 Ǧumādā II 01	6140318											
614 October 11	Friday		-8 Šaʿbān 01	-8 Muḥarram 01	6141011	6141110	6141209	6150107	6150205	6150307	6150406	6150505	6150604	6150704	6150802	6150902
615 March 07	Friday		Nāsī	-8 Ǧumādā II 01	6150307											
615 April 06	Sunday	04	-7 Muḥarram 01	-8 Rağab 01	6150406											
615 October 01	Wednesday		-7 Rağab 01	-7 Muḥarram 01	6151001	6151030	6151128	6151228	6160126	6160224	6160325	6160423	6160523	6160622	6160721	6160820
616 March 25	Thursday	05	-6 Muḥarram 01	-7 Rağab 01	6160325											

Julian Date	Day	Cycle	Luni-Solar Calendar	Lunar Calendar	Muḥarram	Ṣafar	Rabi' I	Rabi' II	Gumada I	Gumada II	Rağab	Sa'ban	Ramaḍan	Sawwal	Du al Qa'da	Du al Ḥiğğa
616 September 19	Sunday		-6 Rağab 01	-6 Muḥarram 01	6160919	6161019	6161117	6161216	6170115	6170213	6170314	6170413	6170512	6170611	6170710	6170809
617 March 14	Monday	06e	-5 Muḥarram 01	-6 Rağab 01	6170314											
617 September 08	Thursday		-5 Rağab 01	-5 Muḥarram 01	6170908	6171008	6171106	6171206	6180104	6180203	6180305	6180403	6180502	6180531	6180630	6180729
618 March 05	Sunday		Nāsī	-5 Rağab 01	6180305											
618 April 03	Monday	07	-4 Muḥarram 01	-5 Ša'bān 01	6180403											
618 August 28	Monday		-4 Ğumādā II 01	-4 Muḥarram 01	6180828	6180927	6181026	6181125	6181225	6190123	6190222	6190323	6190422	6190521	6190619	6190719
619 March 23	Friday	08e	-3 Muḥarram 01	-4 Ša'bān 01	6190323											
619 August 17	Friday		-3 Ğumādā II 01	-3 Muḥarram 01	6190817	6190916	6191015	6191114	6191214	6200112	6200211	6200312	6200410	6200510	6200608	6200707
620 March 12	Wednesday		Nāsī	-3 Ša'bān 01	6200312											
620 April 10	Thursday	09	-2 Muḥarram 01	-3 Ramaḍān 01	6200410											
620 August 06	Wednesday		-2 Ğumādā I 01	-2 Muḥarram 01	6200806	6200904	6201003	6201102	6201202	6201231	6210130	6210302	6210331	6210429	6210529	6210627
621 March 31	Tuesday	10	-1 Muḥarram 01	-2 Ramaḍān 01	6210331											
621 July 26	Sunday		-1 Ğumādā I 01	-1 Muḥarram 01	6210726	6210826	6210923	6211023	6211121	6211221	6220119	6220218	6220320	6220418	6220518	6220616
622 March 20	Saturday	11e	1 Muḥarram 01	-1 Ramaḍān 01	6220320											
622 July 16	Friday		1 Ğumādā I 01	1 Muḥarram 01	6220716	6220814	6220912	6221011	6221110	6221210	6230108	6230207	6230308	6230407	6230507	6230605
623 March 08	Tuesday		Nāsī	1 Ramaḍān 01	6230308											
623 April 07	Thursday	12	2 Muḥarram 01	1 Šawwāl 01	6230407											
623 July 05	Tuesday		2 Rabī' II 01	2 Muḥarram 01	6230705	6230804	6230902	6231002	6231031	6231129	6231229	6240127	6240226	6240326	6240425	6240524
624 March 26	Monday	13	3 Muḥarram 01	2 Šawwāl 01	6240326											
624 June 23	Saturday		3 Rabī' II 01	3 Muḥarram 01	6240623	6240723	6240822	6240920	6241020	6241118	6241217	6250116	6250214	6250316	6250414	6250514
625 March 16	Saturday	14e	4 Muḥarram 01	3 Šawwāl 01	6250316											
625 June 12	Wednesday		4 Rabī' II 01	4 Muḥarram 01	6250612	6250712	6250811	6250909	6251009	6251108	6251207	6260105	6260204	6260305	6260404	6260503
626 March 05	Wednesday		Nāsī	4 Šawwāl 01	6260305											
626 April 04	Friday	15	5 Muḥarram 01	4 Ḏū al Qa'da 01	6260404											
626 June 01	Sunday		5 Rabī' I 01	5 Muḥarram 01	6260601	6260701	6260731	6260829	6260928	6261028	6261126	6261226	6270124	6270223	6270324	6270423
627 March 24	Tuesday	16	6 Muḥarram 01	5 Ḏū al Qa'da 01	6270324											
627 May 22	Friday		6 Rabī' I 01	6 Muḥarram 01	6270522	6270620	6270720	6270818	6270917	6271017	6271116	6271215	6280114	6280212	6280313	6280411
628 March 13	Sunday	17e	7 Muḥarram 01	6 Ḏū al Qa'da 01	6280313											
628 May 11	Wednesday		7 Rabī' I 01	7 Muḥarram 01	6280511	6280609	6280708	6280807	6280905	6281005	6281104	6281203	6290102	6290201	6290302	6290401
629 March 02	Thursday		Nāsī	7 Ḏū al Qa'da 01	6290302											
629 April 01	Saturday	18	8 Muḥarram 01	7 Ḏū al Ḥiğğa 01	6290401											
629 April 30	Sunday		8 Safar 01	8 Muḥarram 01	6290430	6290530	6290628	6290727	6290826	6290924	6291024	6291122	6291222	6300121	6300220	6300321
630 March 21	Wednesday	19e	9 Muḥarram 01	8 Ḏū al Ḥiğğa 01	6300321											
630 April 20	Friday		9 Safar 01	9 Muḥarram 01	6300420	6300519	6300618	6300717	6300815	6300914	6301013	6301112	6301211	6310110	6310209	6310310
631 March 10	Sunday		Nāsī	9 Ḏū al Ḥiğğa 01	6310310											
631 April 09	Tuesday		10 Muḥarram 01	10 Muḥarram 01	6310409	6310509	6310607	6310707	6310805	6310903	6311003	6311101	6311201	6311230	6320129	6320227
632 March 28	Saturday		11 Muḥarram 01	11 Muḥarram 01	6320328	6320427	6320526	6320625	6320725	6320823	6320922	6321021	6321119	6321219	6330117	6330218

APPENDIX VI : Makka & Madīna[447]

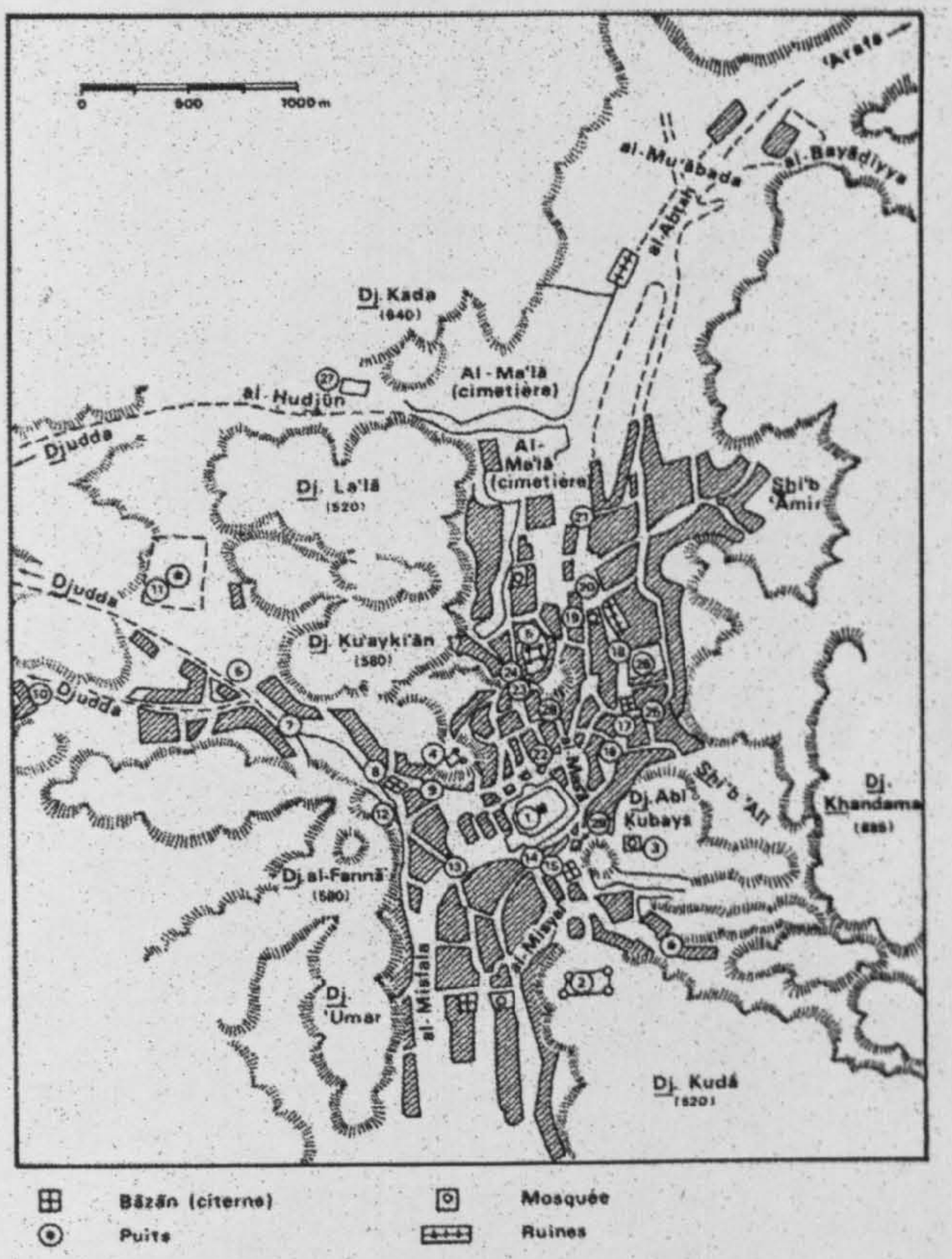

Fig. 3. al-Masdjid al-Ḥarām après l'agrandissement suᶜūdite (d'après Bundūḳdjī).
1. al-Kaᶜba — 2. al-Ḥuṭaym — 3. Maḳām Ibrāhīm — 4. Zamzam — 5. al-Marwa — 6. al-Ṣafā — 7. al-Masᶜā — 8. Bāb al-Malik — 9. Bāb al-ᶜUmra — 10. Bāb al-Salām — 11. Bibliothèque du Ḥaram — 12. Dôme.

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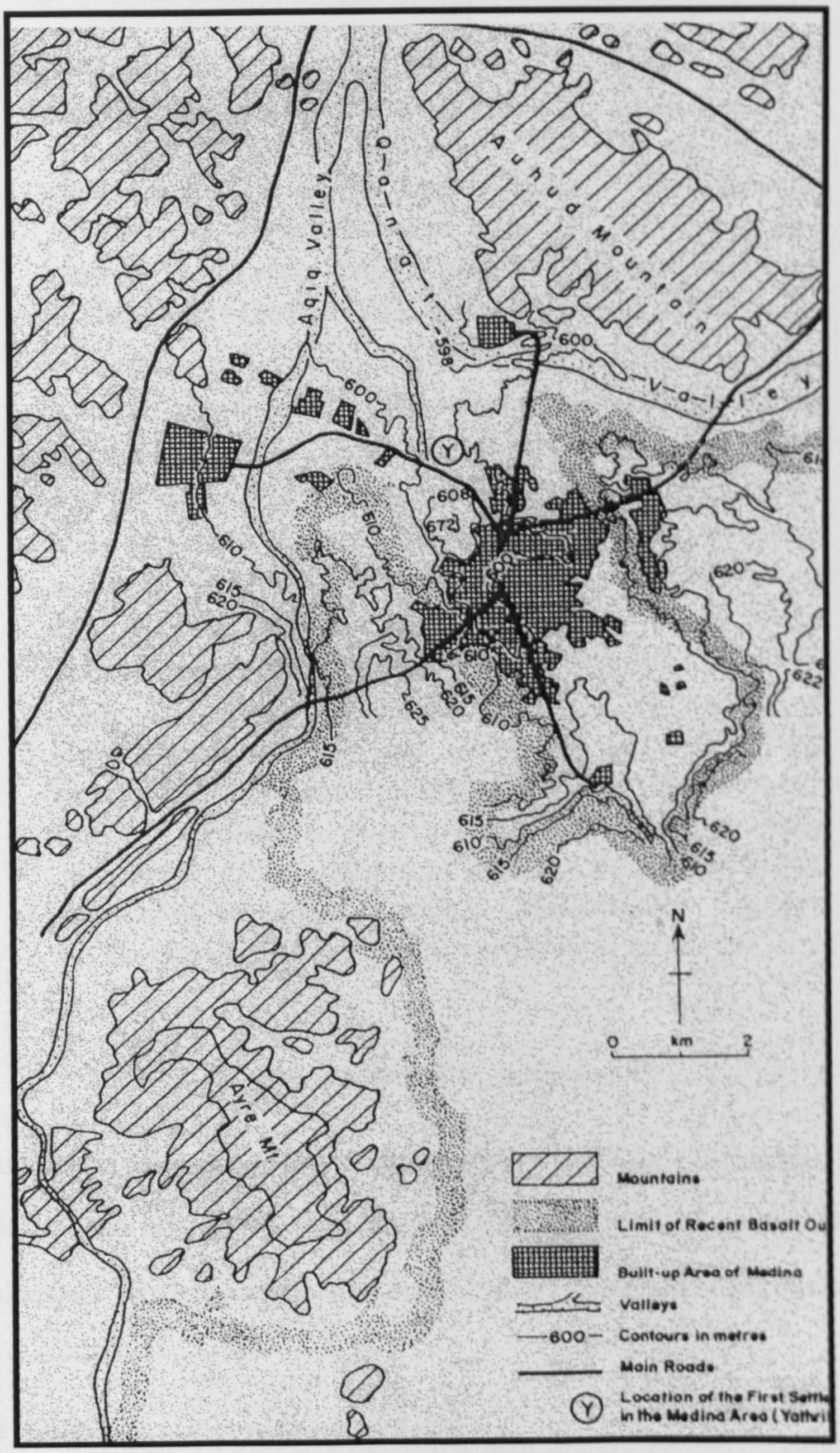
[447] Reproduced from *E.I.*[2] s.v. Makka, and M. S. Makki, *Madina, Saudi Arabia: A Geographic Analysis of the City and Region* (:Avebury, 1982).


Aqiq Valley
Acacia Mountain
Valley
598
600
610
615
620
625
608
672
622
N
0 km 2
Ayre Mt
Mountains
Limit of Recent Basalt Ou
Built-up Area of Medina
Valleys
600 Contours in metres
Main Roads
Location of the First Settle
in the Medina Area (Yathri

APPENDIX VII: Procopius[448]

16 Βελισάριος μὲν τοσαῦτα εἶπε. Πέτρος δὲ καὶ Βούζης ἐξηγεῖσθαι τῷ στρατῷ οὐδὲν μελλήσοντα[3] ἐπὶ τὴν πολεμίαν ἐκέλευον. ὧν δὴ τῇ γνώμῃ
17 εἵποντο εὐθὺς ὁ ξύλλογος ἅπας. Ῥεκίθαγγος μέντοι καὶ Θεόκτιστος, οἱ τῶν ἐν Λιβάνῳ στρατιωτῶν ἄρχοντες, ταὐτὰ μὲν τοῖς ἄλλοις ἀμφὶ τῇ ἐσβολῇ βούλεσθαι καὶ αὐτοὶ ἔφασαν, δεδιέναι δὲ μὴ σφῶν ἐκλελοιπότων τά τε ἐπὶ Φοινίκης καὶ Συρίας χωρία, κατ' ἐξουσίαν μὲν Ἀλαμούνδαρος ταῦτα λῃίζηται, βασιλεὺς δὲ σφᾶς δι' ὀργῆς ἔχοι, ἅτε οὐ φυλάξαντας ἀδῄωτον τὴν χώραν ἧς ἦρχον, καὶ δι' αὐτὸ συνεισβάλλειν τῷ ἄλλῳ στρατῷ
18 οὐδαμῇ ἤθελον. Βελισάριος δὲ τὼ ἄνδρε τούτω ὡς ἥκιστα ἀληθῆ οἴεσθαι ἔλεγε. τοῦ γὰρ καιροῦ τροπὰς θερινὰς εἶναι. ταύτης δὲ τῆς ὥρας δύο μάλιστα μῆνας ἀνάθημα τῷ σφετέρῳ θεῷ Σαρακηνοὺς ἐς ἀεὶ φέροντας ἐν ταύτῃ ἐπιδρομῇ τινι οὔποτε χρῆσθαι ἐς γῆν ἀλλοτρίαν.
19 διὸ δὴ ἑξήκοντα ἡμερῶν ὁμολογήσας ξὺν τοῖς ἑπομένοις ἄμφω ἀφήσειν, ἐκέλευε καὶ αὐτοὺς ξὺν τῷ ἄλλῳ στρατῷ ἕπεσθαι. Βελισάριος μὲν οὖν τὰ ἐς τὴν ἐσβολὴν σπουδῇ πολλῇ ἐξηρτύετο.

[3] μελλήσαντα Braun, μελήσοντα P.

As this text is quoted several times, and by different authors, it merits some comments. The section which interests us here reads "τροπας θερινας",[449] which means "summer solstice" and not "vernal equinox" as translated by Dewing in the Loeb text.[450] As the text only mentions two

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[448] Scanned from, Procopius, *History of the Wars I*, 400-402.

[449] τροπας θερινας and τροπας χειμερινας are the usual terms for the summer and winter solstices. The only writer to use τροπας was Epicurus (3/4 BC). The term for spring is εαρνος, ειαρινος, or ηαρινος, not too different from θερινας, which could explain the error. My thanks to E. Austin who helped clarify this point.

[450] We could also ask if Procopius made a mistake in talking of the summer solstice, as the spring equinox would correspond better to some of the proposed models. According to the purely lunar calendar the summer solstice would have fallen in Ǧumādā II, whereas in the luni-solar calendar, as we have calculated it, the summer solstice fell in Rabīʿ II.

months, we are left with the question of whether an intercalary month was to be inserted that year, or if Procopius simply made a mistake when talking of two, rather than three months. As the author does not describe the calendar used by the "Saracens", we have also to ask ourselves if they did use the pre-Hiğra as described in the early Islamic sources, or whether Mundhir III and his people used some other calendar.

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